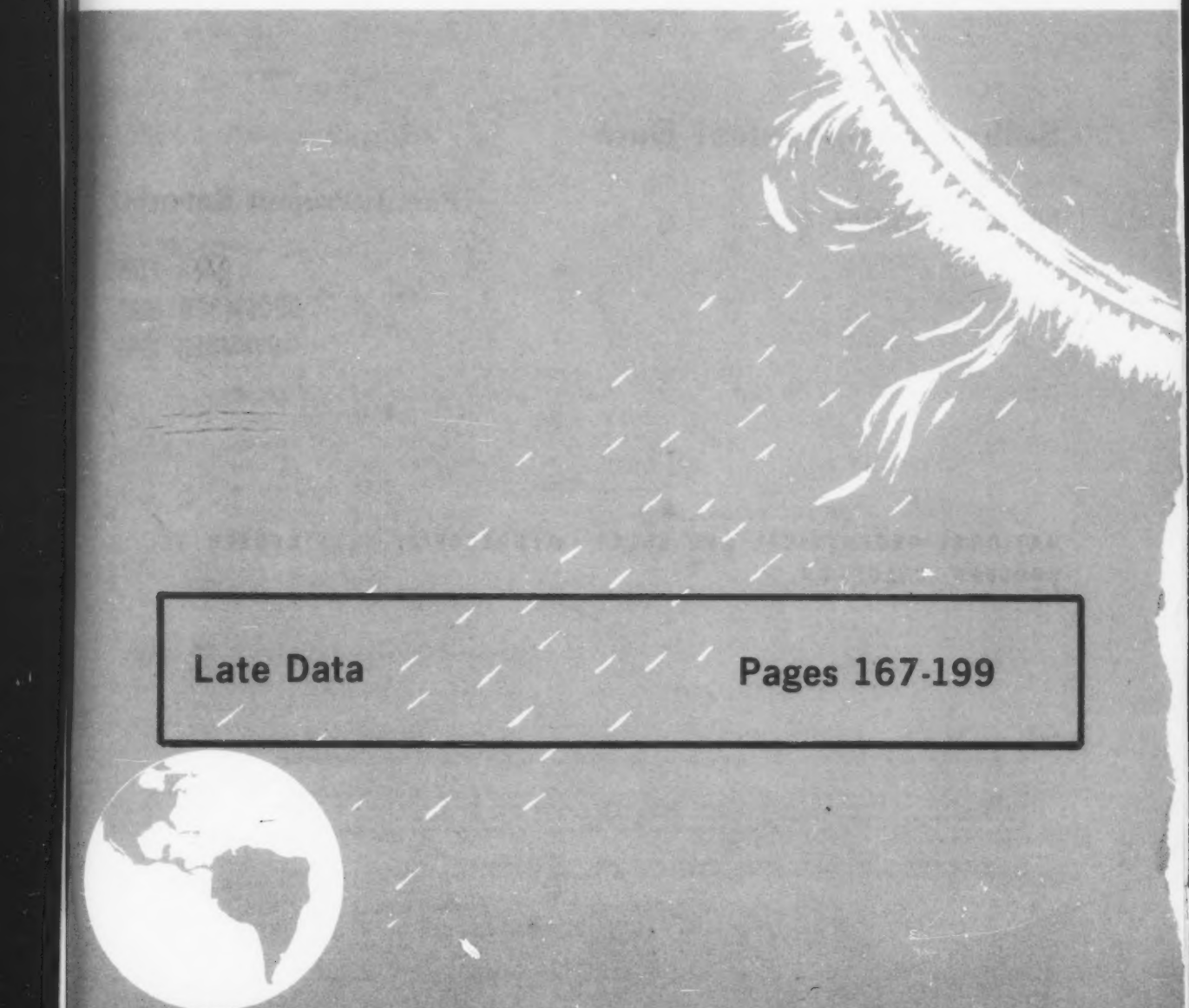
JANUARY 1982 NUMBER 449 -- Part I

Astronomy
QB1.U57, N0449, pt1

Solar-Geophysical Data prompt reports

Data for December 1981, November 1981 & Late Data
Explanation of Data Reports Issued as Number 438 (Supplement) February 1981



Late Data **Pages 167-199**

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Solar - Geophysical Data

NO. 449 JANUARY 1982

Part I (Prompt Reports)

DATA FOR
DECEMBER 1981
NOVEMBER 1981

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SOLAR-GEOPHYSICAL DATA

No. 449

Issued in two parts

Helen E. Coffey, Editor

Joe H. Allen, Chief
Solar-Terrestrial Physics Division

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83 5 228AA5 2 013 1 SN 3101

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		1980 Dec	1981 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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A.1	Sunspot Drawings	438A 44	439A 46	440A 52	441A 58	442A 52	443A 44	444A 52	445A 54	446A 40	447A 54	448A 52	449A 50	
A.2a	Zurich Provisional Relative Sunspot Numbers Rz	437A 11	---	---	---	---	---	---	---	---	---	---	---	---
A.2aa	International Provisional Relative Sunspot Numbers Ri		438A 11	439A 9	440A 11	441A 13	442A 11	443A 9	444A 11	445A 11	446A 11	447A 11	448A 11	449A 11
A.2b	Zurich Final Sunspot Numbers Rz	440A 10	---	---	---	---	---	---	---	---	---	---	---	---
A.2c	American Relative Sunspot Numbers Ra	437A 11	438A 11	439A 9	440A 11	441A 13	442A 11	443A 9	444A 11	445A 11	446A 11	447A 11	448A 11	449A 11
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A.3b	Mt. Wilson Magnetic Characteristics of Sunspots	438A106	439A108	440A108	441A120	442A112	443A106	444A112	445A116	447A163	447A114	448A114	449A110	
A.3c	Kitt Peak Magnetograms	438A 44	439A 46	440A 52	441A 58	442A 52	443A 44	444A 52	445A 54	446A 40	447A 54	448A 52	449A 50	
A.3d	Mean Solar Magnetic Field (Stanford)	437A 48	438A 36	439A 38	440A 46	441A 50	442A 44	443A 38	444A 46	445A 47	446A 34	447A 46	448A 44	449A 38
A.3e	Stanford Magnetograms	438A 44	439A 46	439A 52	441A 58	442A 52	443A 44	444A 52	445A 54	446A 40	447A 54	448A 52	449A 50	
A.4	H-alpha Filtergrams	438A 44	439A 46	440A 52	441A 58	442A 52	443A 44	444A 52	445A 54	446A 40	447A 54	448A 52	449A 50	
A.5	Calcium Plage Drawings - Mt. Wilson or Big Bear	438A 44	439A 46	440A 52	441A 58	442A 52	443A 44	444A 52	445A 54	446A 40	447A 54	448A 52	449A 50	
A.5a	Calcium Plage (Mt. Wilson) and Sunspot Regions	438A106	439A108	440A108	441A120	442A112	443A106	444A112	445A116	447A163	447A114	448A114	449A110	
A.5b	Mt. Wilson Daily Calcium Plage Indices	438A121	439A123	440A121	441A135	442A127	443A119	444A122	445A129	447A175	447A128	449A172	449A127	
A.6	H-alpha Synoptic Charts	438A 40	439A 42	440A 48	441A 54	442A 48	443A 42	444A 50	445A 52	446A 38	447A 50	448A 48	449A 42	
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A.6d	Kitt Peak Solar Magnetic Field Synoptic Charts	438A 42	439A 44	440A 50	441A 56	442A 50	449A190	449A192	449A194	449A196	449A198	449A 46	449A 47	
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A.7g	Helium Synoptic Maps (KPNO)	438A 43	439A 45	440A 51	441A 57	449A188	449A189	449A191	449A193	449A197	449A199	449A 48	449A 49	
A.7h	Coronal Line Emission (Sac Peak)	438A 44	439A 46	440A 52	441A 58	442A 52	443A 44	444A 52	445A 54	446A 40	447A 54	448A 52	449A 50	
A.8aa	2800 MHz - Daily Values of Solar Flux (ARO-Ottawa)	437A 11	438A 11	439F 9	440A 11	441A 13	442A 11	443A 9	444A 11	445A 11	446A 11	447A 11	448A 11	449A 11
A.8ac	2800 MHz - Daily Values of Adj. Solar Flux (ARO-Ottawa)	437A 11	438A 11	439A 9	440A 11	441A 13	442A 11	443A 9	444A 11	445A 11	446A 11	447A 11	448A 11	449A 11
A.8g	Daily Values of Adjusted Solar Flux (AFGL)	437A 11	438A 11	439A 9	440A 11	441A 13	442A 11	443A 9	444A 11	445A 11	---	447A 11	448A 11	449A 11
A.10a	169 MHz - Interferometric Observations (Nancay)	438A161	439A154	439A 24	440A 29	442A160	442A 27	443A 23	444A 27	445A 27	446A 20	447A 28	448A 25	449A 25
A.10c	21 cm East-West Solar Scans (Fleurs)	437A 34	438A 24	439A 27	440A 32	441A 33	442A 30	443A 26	444A 30	445A 30	446A 23	447A 32	448A 28	449A 28
A.10d	43 cm East-West Solar Scans (Fleurs)	437A 35	438A 25	439A 28	440A 33	441A 34	442A 31	443A 27	444A 31	445A 31	446A 24	447A 33	448A 29	449A 29
A.10e	10.7 cm East-West Solar Scans (Ottawa-ARO)	437A 33	438A 23	439A 26	440A 31	441A 32	442A 29	443A 25	444A 29	445A 29	446A 22	447A 31	448A 27	449A 27
A.10f	3 cm East-West Solar Scans (Toyokawa)	437A 32	438A 22	439A 25	440A 30	441A 31	442A 28	443A 24	444A 28	445A 30	---	447A 29	448A 26	449A 26
A.10g	8 cm East-West Solar Scans (Toyokawa)										446A 21	447A 30	---	---
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A.13e	Solar Plasma (IMP H & J)	449B103	449B104	449B105	449B106	449B107	449B108							
A.13f	Solar Wind (Pioneer 12 (Venus))	437A 45	438A 37	442A170	442A170	442A171	442A 45	443A 39	444A 47	445A 45	446A 31	447A 43	448A 41	449A 35
A.17	Interplanetary Magnetic Field (Pioneer 12)	438A125	439A127	440A153	---	---	---	444A126	445A135	446A107	447A129		---	---
A.17c	Inferred IP Magnetic Field	437A 46	438A 34	439A 36	440A 44	441A 48	442A 42	443A 36	444A 44	445A 46	446A 32	447A 44	448A 42	449A 36
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C.1ba	Optical Observations Flares (Standardized Data) 1979-80	443B 28	445B 60	447B 44	449B 68									
C.1d	Flare Patrol Observations	437A 31	438A 21	439A 23	440A 28	441A 30	442A 26	443A 22	444A 26	445A 26	446A 19	448A158	---	449A 24
C.1d	Flare Patrol Observations 1979-80	443B 59	445B 90	448B 42	449B 95									
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	Solar Radio Waves - Fixed Frequencies - Selected	437A 36	438A 26	439A 29	440A 34	441A 35	442A 32	443A 28	444A 32	445A 32	446A 25	447A 34	448A 30	449A 30
C.4a	Solar Radio Spectral Obs. (Fort Davis)	439A155	439A128	440A126	441A136	442A134	443A123	444A127	445A136	446A108	447A130	448A134	449A132	
C.4d	Solar Radio Spectral Obs. (Culgoora)	438A126	439A128	440A126	441A136	443A154	443A123	444A127	445A136	446A108	447A130	448A173	449A132	
C.4e	Solar Radio Spectral Obs. (Weissenau)	439A128	440A126	441A136	442A134	443A123	445A174	445A136	445A136	446A108	447A130	448A173	449A132	
C.4f	Solar Radio Spectral Obs. (Sagamore Hill)	438A126	439A128	440A126	441A136	442A134	443A123	444A127	445A136	446A108	447A130	448A134	449A132	
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C.4i	Solar Radio Spectral Obs. (Bleien)	438A126	439A128	440A126	441A136	442A134	443A123	444A127	445A136					
C.4j	Solar Radio Spectral Obs. (Manila)													
C.4k	Solar Radio Spectral Obs. (Learmonth)	438A126	439A128	440A126	441A136	442A134	443A123	444A127	445A136	446A108	447A130	448A134	449A132	
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D.1d	Principal Magnetic Storms	438A154	439A148	440A152	441A166	442A155	443A147	444A147	445A163	447A180	448A164	449A186	449A162	
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D.1g	Equatorial Indices Dst	438A153	440A160	441A172	442A182	444A155	445A182	445A183	446A144	447A179	448A163	449A185		
D.1h	Geomagnetic Substorm Log (Boulder)	437A 49	438A 38	439A 40	440A 43	441A 51	442A 46	443A 40	444A 48	445A 4	446A 35	447A 47	448A 45	449A 3
F.	COSMIC RAYS													
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F.1e	Cosmic Ray Neutron Counts (Alert)	439A162	440A159	440A145	442A177	442A151	444A152	447A176	447A176	447A177	447A151	449A180		
F.1h	Cosmic Ray Neutron Counts (Thule)	438A148	439A144	440A145	441A159	442A151	443A141	444A141	445A157	446A134	447A151	448A149	449A158	
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Notes:

"438A 44" listed under 1980 Dec means that the sunspot drawings for Dec 1980 were contained in Solar-Geophysical Data Number 438 - Part I, beginning on page 44.

A = Part I, B = Part II.

----- = no data available.
blank = data not yet received.

DECEMBER 1981 DATA

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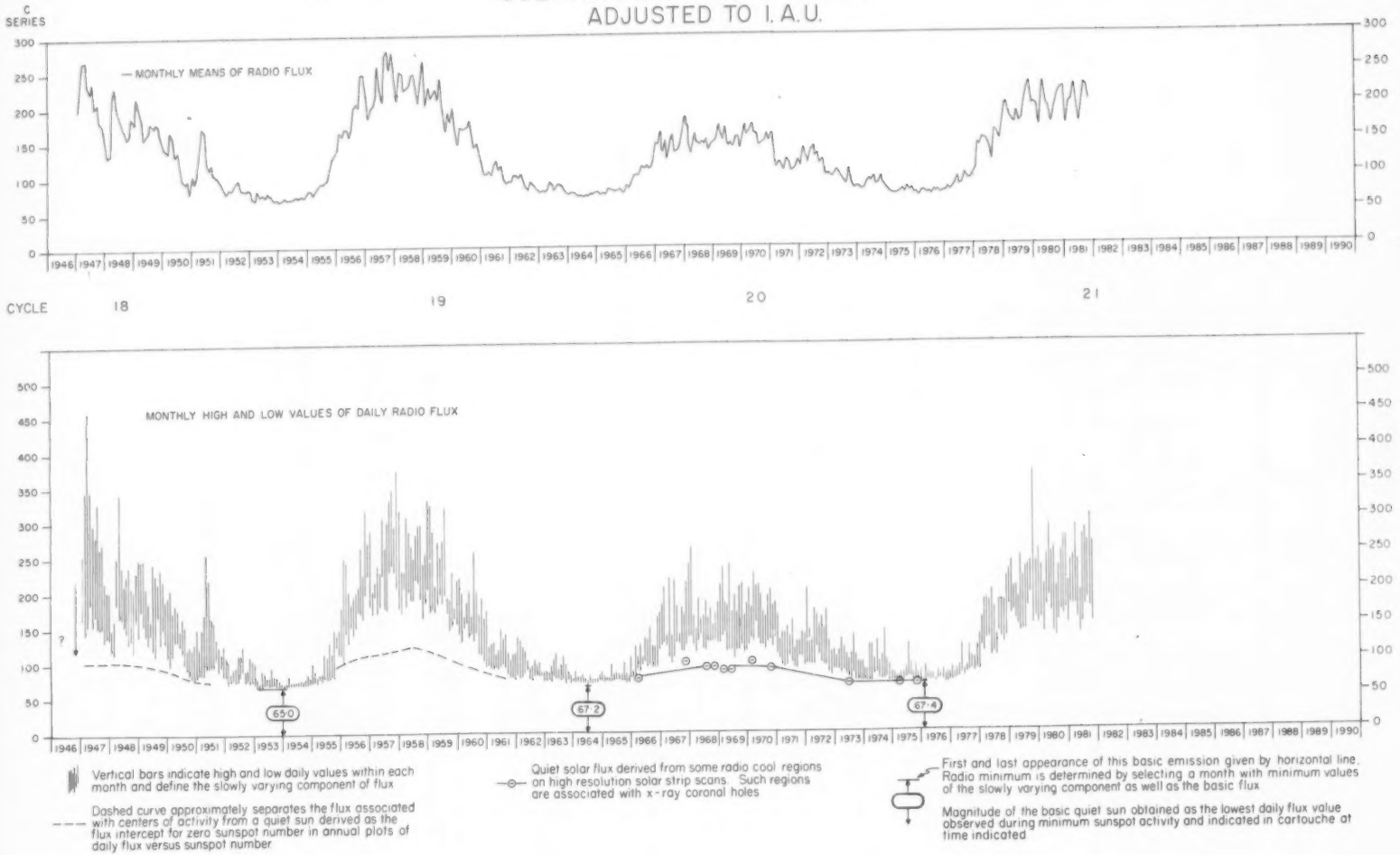
SOLAR RADIO FLUX, 10·7 CM
ADJUSTED TO I.A.U.



ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE
DECEMBER 1981

See page 9 for PRESTO Messages.

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	No. of Flares: Total	M	X	Outstanding events	Forecasts: Date	Location Lat-Long	Desc*	Alert Situations
335	01	30	257	232	002	N13W46	2	0	0		01	N13W46	E	SOLNIL
						S20W41	0	0	0			S20W41	Q	MAGQUIET
						N17W10	11	0	0			N17W10	E	
						S10E06	8	0	0			S10E06	E	
						N14E12	0	0	0			N14E12	Q	
						S14E28	1	0	0			S14E28	Q	
						S03E55	0	0	0			S03E55	Q	
						S19E57	0	0	0			S19E57	Q	
						N19E64	4	0	0			N19E64	Q	
						N06E78	1	0	0			N06E78	A	
336	02	01	244	237	006	N13W60	1	0	0		02	N13W60	E	SOLALERT MINOR 01/02
						S21W52	0	0	0			S21W52	Q	MAGQUIET
						N16W23	9	4	0			N16W23	E	
						S10W08	4	0	0			S10W08	E	
						N13W02	1	0	0			N13W02	Q	
						S15E14	0	0	0			S15E14	Q	
						S04E43	0	0	0			S04E43	Q	
						S20E44	1	0	0			S20E44	Q	
						N19E52	6	0	0			N19E52	Q	
						N06E61	1	0	0			N06E61	E	
337	03	02	297	241	007	N13W72	1	0	0		03	N13W72	E	SOLALERT MINOR 03
						S22W67	1	0	0			S22W67	Q	MAGQUIET
						N16W37	2	0	0			N16W37	E	
						S11W20	2	0	0			S11W20	E	
						N12W12	0	0	0			N12W12	Q	
						S15E01	0	0	0			S15E01	Q	
						N03E13	1	0	0			N03E13	Q	
						S03E29	3	0	0			S03E29	Q	
						S19E31	1	0	0			S19E31	Q	
						N20E39	1	0	0			N20E39	E	
						S16E47	0	0	0			S16E47	Q	
						N07E52	3	0	0			N07E52	E	
						N02E64	0	0	0			N02E64	E	
						S30E72	0	0	0			S30E72	Q	
						S18E73	0	0	0			S18E73	Q	
						N20E74	0	0	0			N20E74	Q	
338	04	03	327	246	011	N13W83	4	0	0		04	N13W83	E	SOLNIL
						S20W78	0	0	0			S20W78	Q	MAGQUIET
						S16W66	0	0	0			S16W66	Q	
						N17W51	8	1	0			N17W51	E	
						S10W36	1	0	0			S10W36	E	
						S14W13	1	0	0			S14W13	Q	
						S03E16	0	0	0			S03E16	Q	
						S20E17	1	0	0			S20E17	Q	
						N20E26	1	0	0			N20E26	E	
						S17E34	0	0	0			S17E34	Q	
						N06E35	1	0	0			N06E35	E	
						N02E48	0	0	0			N02E48	Q	
						S18E58	0	0	0			S18E58	E	
						S32E58	0	0	0			S32E58	Q	
						N18E62	1	0	0			N18E62	E	
						N07E64	1	0	0			N07E64	Q	
						S21E67	0	0	0			S21E67	Q	
						N13E76	0	0	0			N13E76	Q	
						S14E77	0	0	0			S14E77	Q	
339	05	04	266	249	014	N17W63	0	0	0		05	N17W63	E	SOLQUIET
						S10W52	0	0	0			N10W52	E	MAGQUIET
						S15W26	0	0	0			S15W26	Q	
						S04E01	0	0	0			S04E01	Q	
						S20E03	1	0	0			S20E03	Q	
						N19E12	0	0	0			N19E12	Q	
						N06E22	0	0	0			N06E22	E	
						N02E33	0	0	0			N02E33	Q	
						S18E43	0	0	0			S18E43	Q	
						S31E45	0	0	0			S31E45	Q	
						N08E49	3	0	0			N08E49	Q	
						N19E50	2	0	0			N19E50	E	
						S21E54	0	0	0			S21E54	Q	
						N12E62	0	0	0			N12E62	Q	
						S15E62	0	0	0			S15E62	Q	
						N09E70	0	0	0			N09E70	Q	
340	06	05	281	268	010	N17W80	1	0	0		06	N17W80	Q	SOLQUIET
						S10W65	1	0	0			S10W65	Q	MAGQUIET
						S15W40	0	0	0			S15W40	Q	
						S03W11	2	0	0			S03W11	Q	
						S20W09	0	0	0			S20W09	Q	
						N20E01	0	0	0			N20E01	Q	
						N06E07	0	0	0			N06E07	E	
						N02E22	0	0	0			N02E22	Q	
						S18E30	0	0	0			S18E30	Q	
						S32E32	0	0	0			S32E32	Q	
						N19E37	1	0	0			N19E37	E	
						N07E38	1	0	0			N07E38	Q	
						S20E41	0	0	0			S20E41	Q	
						S15E51	0	0	0			S15E51	Q	
						N13E53	0	0	0			N13E53	Q	

ALERT PERIODS

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SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions				Outstanding events	Forecasts			Alert Situations
						Location Lat-Long	No. of Flares Total	M	X		Date	Location Lat-Long	Desc*	
						N08E58	3	0	0			N08E58	Q	
						N18E79	0	0	0			N18E79	Q	
341	07	06	333	270	008	S09W80	0	0	0		07	S09W80	E	SOLQUIET
						S13W46	0	0	0			S13W46	Q	MAGQUIET
						S03W24	0	0	0			S03W24	Q	
						S20W20	1	0	0			S20W20	Q	
						N20W12	0	0	0			N20W12	Q	
						N05W04	1	0	0			N05W04	E	
						N02E09	0	0	0			N02E09	Q	
						S18E17	0	0	0			S18E17	Q	
						S32E21	0	0	0			S32E21	Q	
						N08E24	3	0	0			N08E24	E	
						N19E24	5	0	0			N19E24	E	
						S21E30	1	0	0			S21E30	E	
						S15E39	0	0	0			S15E39	Q	
						N12E40	0	0	0			N12E40	Q	
						N06E44	1	0	0			N06E44	Q	
						N10E64	0	0	0			N10E64	Q	
						N18E65	0	0	0			N18E65	Q	
						S15E72	0	0	0			S15E72	Q	
342	08	07	353	288	003	S08W90	0	0	0		08	S08W90	E	SOLQUIET
						S13W61	4	0	0			S13W61	Q	MAGQUIET
						S04W36	0	0	0			S04W36	Q	
						S19W33	1	0	0			S19W33	Q	
						N20W29	1	0	0			N20W29	Q	
						N05W20	0	0	0			N05W20	E	
						N01W06	0	0	0			N01W06	Q	
						S18E05	1	0	0			S18E05	Q	
						N08E10	2	1	0			N08E10	E	
						N19E10	4	0	0			N19E10	E	
						S19E17	0	0	0			S19E17	Q	
						S15E25	0	0	0			S15E25	Q	
						N13E26	0	0	0			N13E26	Q	
						N07E30	0	0	0			N07E30	E	
						N01E49	3	0	0			N01E49	Q	
						N17E51	0	0	0			N17E51	Q	
						S15E59	0	0	0			S15E59	E	
						S20E66	0	0	0			S20E66	Q	
						S06E74	6	2	0			S06E74	E	
343	09	08	348	297	014	S13W74	2	1	0	Presto Tenflare	09	S13W74	Q	SOLQUIET
						S20W48	1	0	0	370 Flux Units		S20W48	Q	MAGQUIET
						N20W37	0	0	0	08/0524Z Duration		N20W37	Q	
						N05W34	0	0	0	4 Minutes		N05W34	E	
						S18W09	0	0	0			S18W09	Q	
						N09W03	5	0	0			N09W03	E	
						N18W03	2	0	0			N18W03	E	
						S20E03	0	0	0			S20E03	Q	
						S14E12	1	0	0			S14E12	Q	
						N13E13	0	0	0			N13E13	Q	
						N07E17	1	0	0			N07E17	Q	
						N18E38	1	0	0			N18E38	Q	
						N11E35	1	0	0			N11E35	Q	
						S15E46	2	0	0			S15E46	Q	
						S20E55	1	0	0			S20E55	Q	
						S06E63	10	0	0			S06E63	E	
344	10	09	378	305	013	S13W89	1	0	0	Presto Soflare	10	S13W89	Q	SOLALERT 10/XX
						N06W47	3	0	0	M5/3B N12W16		M06W47	E	MAGALERT 11
						S16W22	0	0	0	09/1917Z Duration		S16W22	Q	
						N19W17	7	1	0	47 Minutes.Tenflare		N19W17	E	
						S32W17	0	0	0	610 Flux Units		S32W17	Q	
						N09W16	1	1	0	09/1855Z Duration		N09W16	E	
						N12W01	0	0	0	115 Minutes.		N12W01	Q	
						S15W01	0	0	0	Suspected Magflare		S15W01	Q	
						S20W10	0	0	0			S20W10	Q	
						N06E02	0	0	0			N06E02	Q	
						N18E25	0	0	0			N18E25	Q	
						N10E20	0	0	0			N10E20	Q	
						S06E20	0	0	0			S06E20	Q	
						N10E27	0	0	0			N10E27	Q	
						S15E33	7	1	0			S15E33	E	
						S20E42	0	0	0			S20E42	Q	
						S07E51	0	0	0			S07E51	E	
345	11	10	360	287	007	N22W66	0	0	0	Presto Proton	11	N22W66	Q	SOLALERT 11/XX
						N05W61	2	0	0	Event Began 10/0245Z		N05W61	E	MAGALERT 11/12
						N20W52	0	0	0	65 Protons at		N20W52	Q	
						S17W34	0	0	0	10/1045Z		S17W34	Q	
						S33W31	0	0	0			S33W31	Q	
						N08W30	6	0	0			N08W30	E	
						N19W30	7	0	0			N19W30	E	
						S19W23	0	0	0			S19W23	Q	
						N12W14	1	0	0			N12W14	Q	
						N07W13	1	0	0			N07W13		
						S15W13	0	0	0			S15W13	Q	
						S07E07	0	0	0			S07E07	Q	
						N18E08	0	0	0			N18E08	Q	
						N18E12	0	0	0			N18E12	Q	

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SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	No. of Flares: Total	M	X	Outstanding events	Forecasts: Date	Location Lat-Long	Desc*	Alert Situations
						N10E15	0	0	0			N10E15	Q	
						S15E21	4	0	0			S15E21	E	
						S20E30	0	0	0			S20E30	Q	
						S06E38	0	0	0			S06E38	E	
346	12	11	344	278	005	N22W80	0	0	0		12	N22W80	Q	SOLALERT 12/XX
						N04W76	0	0	0			N04W76	E	MAGALERT 12
						N19W66	0	0	0			N19W66	Q	
						S17W48	0	0	0			S17W48	Q	
						N19W44	7	0	0			N19W44	E	
						N08W43	1	0	0			N08W43	E	
						S33W42	0	0	0			S33W42	Q	
						S18W37	0	0	0			S18W37	Q	
						N12W28	0	0	0			N12W28	Q	
						N08W26	0	0	0			N08W26	Q	
						S14W26	0	0	0			S14W26	Q	
						N11W07	0	0	0			N11W07	Q	
						S07W07	2	0	0			S07W07	Q	
						N18W02	0	0	0			N18W02	Q	
						N10E01	0	0	0			N10E01	Q	
						S15E07	1	0	0			S15E07	E	
						S20E16	0	0	0			S20E16	Q	
						S06E24	3	0	0			S06E24	Q	
						N14E71	0	0	0			N14E71	Q	
347	13	12	302	260	018	N04W90	2	1	0		13	N04W90	E	SOLALERT 13/XX
						N20W80	0	0	0			N20W80	Q	MAGNIL
						S18W63	0	0	0			S18W63	Q	
						N08W58	1	0	0			N08W58	E	
						N19W58	3	0	0			N19W58	E	
						S18W51	0	0	0			S18W51	Q	
						N12W41	0	0	0			N12W41	Q	
						S14W41	0	0	0			S14W41	Q	
						N07W40	0	0	0			N07W40	Q	
						N11W21	0	0	0			N11W21	Q	
						S07W20	2	0	0			S07W20	Q	
						N18W16	0	0	0			N18W16	Q	
						S15W06	0	0	0			S15W06	E	
						S21W00	0	0	0			S21W00	Q	
						S07E11	0	0	0			S07E11	Q	
						N13E55	0	0	0			N13E55	Q	
348	14	13	274	226	012	S18W76	0	0	0		14	S18W76	Q	SOLALERT 14/15
						N08W72	1	0	0			N08W72	E	MAGQUIET
						N19W72	1	1	0			N19W72	E	
						S19W64	0	0	0			S19W64	Q	
						N07W54	0	0	0			N07W54	Q	
						N12W54	0	0	0			N12W54	Q	
						S15W54	0	0	0			S15W54	Q	
						N10W35	1	0	0			N10W35	Q	
						S07W34	1	0	0			S07W34	Q	
						N12W30	0	0	0			N12W30	Q	
						N18W28	0	0	0			N18W28	Q	
						S16W20	1	0	0			S16W20	E	
						S20W12	0	0	0			S20W12	Q	
						S07W03	1	0	0			S07W03	Q	
						N12E42	0	0	0			N12E42	Q	
						N11E55	0	0	0			N11E55	Q	
349	15	14	236	199	007	S18W88	0	0	0		15	S18W88	Q	SOLNIL
						N19W86	0	0	0			N19W86	E	MAGQUIET
						N09W83	1	0	0			N09W83	Q	
						S19W76	1	0	0			S19W76	Q	
						N06W69	0	0	0			N06W69	Q	
						N13W68	2	0	0			N13W68	Q	
						S14W67	0	0	0			S14W67	Q	
						N11W47	0	0	0			N11W47	Q	
						S07W47	3	0	0			S07W47	Q	
						N18W41	0	0	0			N18W41	Q	
						S16W32	1	0	0			S16W32	Q	
						N13W28	0	0	0			N13W28	Q	
						S20W25	0	0	0			S20W25	Q	
						S06W16	3	0	0			S06W16	Q	
						N11E41	1	0	0			N11E41	Q	
350	16	15	156	178	004	N05W82	0	0	0	Presto Tenflare	16	N05W82	Q	SOLQUIET
						N13W82	0	0	0	190 Flux Units		N13W82	Q	MAGQUIET
						S14W80	0	0	0	15/1945Z Duration		S14W80	Q	
						N11W60	0	0	0	5 Minutes.		N11W60	Q	
						S08W60	10	0	0			S08W60	Q	
						N18W53	0	0	0			N18W53	Q	
						S15W46	6	0	0			S15W46	E	
						S19W38	0	0	0			S19W38	Q	
						S07W31	5	0	0			S07W31	E	
						N12E26	0	0	0			N12E26	Q	
						S21E73	0	0	0			S21E73	Q	
351	17	16	153	163	006	N12W95	0	0	0		17	N12W95	Q	SOLQUIET
						S15W92	0	0	0			S15W92	Q	MAGQUIET
						S08W75	0	0	0			S08W75	E	
						N18W67	0	0	0			N18W67	Q	

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SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	Active Regions: No of Flares Total	Active Regions: No of Flares M	Active Regions: No of Flares X	Outstanding events	Forecasts: Date	Forecasts: Location Lat-Long	Forecasts: Desc*	Alert Situations
						S15W59	3	0	0			S15W59	E	
						S19W52	0	0	0			S19W52	Q	
						S07W44	4	0	0			S07W44	E	
						S09W28	0	0	0			S09W28	Q	
						N07W07	0	0	0			N07W07	Q	
						N12E13	0	0	0			N12E13	Q	
						S23E58	0	0	0			S23E58	Q	
352	18	17	091	149	004	N19W82	0	0	0		18	N19W82	Q	SOLQUIET
						S15W73	0	0	0			S15W73	E	MAGQUIET
						S08W58	3	0	0			S08W58	Q	
						S08W42	1	0	0			S08W42	Q	
						N09W19	0	0	0			N09W19	Q	
						N12W01	1	0	0			N12W01	Q	
						S08E17	0	0	0			S08E17	Q	
353	19	18	111	142	018	S07W73	3	0	0		19	S07W73	Q	SOLQUIET
						S08W52	0	0	0			S08W52	Q	MAGQUIET
						N14W16	0	0	0			N14W16	Q	
						S11W13	0	0	0			S11W13	Q	
						S08E04	1	0	0			S08E04	Q	
						N17E32	0	0	0			N17E32	Q	
						N13E73	0	0	0			N13E73	Q	
						S14E87	0	0	0			S14E87	Q	
354	20	19	104	134	008	S07W86	0	0	0		20	S07W86	Q	SOLQUIET
						S09W72	0	0	0			S09W72	Q	MAGQUIET
						N12W29	0	0	0			N12W29	Q	
						S12W26	0	0	0			S12W26	Q	
						S09W11	1	0	0			S09W11	Q	
						N17E17	0	0	0			N17E17	Q	
						N11E52	0	0	0			N11E52	Q	
						N12E59	0	0	0			N12E59	Q	
355	21	20	080	138	007	N13E47	0	0	0		21	N13E47	Q	SOLQUIET
						N14W43	0	0	0			N14W43	Q	MAGQUIET
						S12W39	0	0	0			S12W39	Q	
						S09W23	0	0	0			S09W23	Q	
						N10E78	1	0	0			N10E78	Q	
						S22E84	0	0	0			S22E84	Q	
356	22	21	099	147	006	N14W57	0	0	0		22	N14W57	Q	SOLQUIET
						S12W53	0	0	0			S12W53	Q	MAGQUIET
						S09W36	1	0	0			S09W36	Q	
						N10E25	0	0	0			N10E25	Q	
						N13E33	0	0	0			N13E33	Q	
						S24E43	0	0	0			S24E43	Q	
						N24E69	0	0	0			N24E69	Q	
						S23E71	0	0	0			S23E71	Q	
357	23	22	111	150	004	S12W66	0	0	0		23	S12W66	Q	SOLQUIET
						S09W50	0	0	0			S09W50	Q	MAGQUIET
						N10E12	0	0	0			N10E12	Q	
						N12E23	1	0	0			N12E23	Q	
						S24E30	3	0	0			S24E30	Q	
						N23E55	2	0	0			N23E55	Q	
						S24E58	0	0	0			S24E58	Q	
						S08E65	0	0	0			S08E65	Q	
358	24	23	115	158	006	S08W67	0	0	0		24	S08W67	Q	SOLQUIET
						S16W40	0	0	0			S16W40	Q	MAGQUIET
						N10W03	0	0	0			N10W03	Q	
						N12E08	0	0	0			N12E08	Q	
						S23E16	2	0	0			S23E16	Q	
						N22E41	0	0	0			N22E41	Q	
						S23E44	1	0	0			S23E44	E	
						S08E52	0	0	0			S08E52	Q	
359	25	24	120	163	007	S08W81	0	0	0		25	S08W81	Q	SOLQUIET
						N10W14	0	0	0			N10W14	Q	MAGQUIET
						N12W07	0	0	0			N12W07	Q	
						S24E04	0	0	0			S24E04	Q	
						N23E26	1	0	0			N23E26	E	
						S23E31	6	0	0			S23E31	Q	
						S08E39	0	0	0			S08E39	Q	
						S17E45	0	0	0			S17E45	Q	
						S08E65	0	0	0			S08E65	Q	
360	26	25	102	168	006	N12W20	1	0	0		26	N12W20	Q	SOLQUIET
						S25W07	0	0	0			S25W07	Q	MAGQUIET
						N22E13	2	0	0			N22E13	E	
						S23E18	0	0	0			S23E18	Q	
						S08E25	2	0	0			S08E25	Q	
						S17E32	0	0	0			S17E32	Q	
						S10E57	0	0	0			S10E57	Q	
361	27	26	142	172	009	N12W32	1	0	0		27	N12W32	Q	SOLQUIET
						S24W19	0	0	0			S24W19	Q	MAGQUIET
						N22W01	1	0	0			N22W01	E	
						S23E05	0	0	0			S23E05	Q	

ALERT PERIODS

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SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions				Outstanding events	Forecasts			Alert Situations
						Location	No of Flares				Date	Location	Desc*	
						Lat-Long	Total	M	X			Lat-Long		
						S08E12	0	0	0			S08E12	Q	
						S19E18	2	0	0			S19E18	Q	
						S09E37	0	0	0			S09E37	Q	
						S11E43	3	0	0			S11E43	Q	
362	28	27	154	183	007	N12W45	1	0	0		28	N12W45	Q	SOLQUIET
						S24W32	0	0	0			S24W32	Q	MAGQUIET'
						S23W30	1	0	0			S23W30	Q	
						N22W14	1	0	0			N22W14	Q	
						S24W07	0	0	0			S24W07	Q	
						S20E06	3	0	0			S20E06	Q	
						S09E27	0	0	0			S09E27	Q	
						S11E30	2	0	0			S11E30	Q	
						S11E49	0	0	0			S11E49	Q	
363	29	28	197	189	014	N12W60	0	0	0		29	N12W60	Q	SOLQUIET
						S15W44	0	0	0			S15W44	Q	MAGQUIET
						S22W43	2	0	0			S22W43	Q	
						N21W28	1	0	0			N21W28	Q	
						S18W24	0	0	0			S18W24	Q	
						S25W21	0	0	0			S25W21	Q	
						S20W08	1	0	0			S20W08	E	
						S12E15	4	0	0			S12E15	Q	
						N18E21	6	0	0			N18E21	E	
						S11E34	0	0	0			S11E34	Q	
						N06E54	3	0	0			N06E54	Q	
						N25E70	3	0	0			N25E70	Q	
364	30	29	186	190	030	N11W72	0	0	0	A SSC Was Observed	30	N11W72	Q	SOLQUIET
						S22W54	0	0	0	24 Gamma At 29/0455Z		S22W54	E	MAGALERT MINOR 30/30
						N19W43	1	0	0	Followed by Minor		N19W43	Q	
						S25W33	0	0	0	Storm Conditions		S25W33	E	
						S08W27	0	0	0	For Next 12 Hours		S08W27	Q	
						S21W22	1	0	0			S21W22	Q	
						N17E09	3	0	0			N17E09	E	
						S11E19	0	0	0			S11E19	Q	
						S19W35	0	0	0			S19W35	Q	
						N06E42	1	0	0			N06E42	Q	
						N25E56	0	0	0			N25E56	Q	
365	31	30	164	192	024	N12W84	0	0	0	Presto Kakioka	31	N12W84	Q	SOLQUIET
						S22W69	0	0	0	30/0125Z Magstorm		S22W69	E	MAGNIL
						N20W58	3	0	0	29/0456Z		N20W58	Q	
						S18W49	0	0	0			S18W49	Q	
						S24W48	0	0	0			S24W48	E	
						S21W34	3	0	0			S21W34	Q	
						N17W05	2	0	0			N17W05	E	
						S12E04	0	0	0			S12E04	Q	
						N05E27	3	0	0			N05E27	Q	
						N24E41	0	0	0			N24E41	E	
001	01	31	178	187	020	S21W82	0	0	0		01	S21W82	Q	SOLQUIET
						N20W73	1	0	0			N20W73	E	MAGQUIET
						S18W63	0	0	0			S18W63	Q	
						S24W61	0	0	0			S24W61	E	
						S09W55	0	0	0			S09W55	Q	
						S19W50	0	0	0			S19W50	Q	
						N18W18	0	0	0			N18W18	E	
						S10W10	0	0	0			S10W10	Q	
						N06E14	0	0	0			N06E14	Q	
						N25E30	0	0	0			N25E30	Q	
						N10E54	0	0	0			N10E54	Q	
						S15E72	0	0	0			S15E72	Q	

* Q=Quiet E=Eruptive A=Active P=Proton C=Caution D=Doubtful O.G.=Other Groups MF=Major Flare

PRESTO MESSAGES (THE RAPID REPORT OF MAJOR EVENTS)

08 DECEMBER 1981 BOULDER 08/1417Z TENFLARE 370 FLUX UNITS 08/0524Z DURATION 4 MINUTES
09 DECEMBER 1981 BOULDER 09/1953Z TENFLARE 610 FLUX UNITS 09/1855Z DUFATION GREATER THAN 50 MINUTES
09 DECEMBER 1981 BOULDER 09/1935Z SOFLARE M5/3B 09/1911Z DURATION 47 MINUTES
10 DECEMBER 1981 BOULDER 10/0546Z PROTON EVENT BEGAN AT 10/0245Z 65 PROTONS/CM2/SEC/STER AT GREATER THAN 10 MEV AT 10/1045Z
15 DECEMBER 1981 BOULDER 15/2116Z TENFLARE 190 FLUX UNITS 15/1945Z DURATION 5 MINUTES
30 DECEMBER 1981 KAKIOKA 30/0125Z MAGSTORM 29/0456Z

RELATIVE SUNSPOT NUMBERS
INTERNATIONAL, R_I

1981 PROVISIONAL

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	147	148	147	132	112	62	149	121	219	216	165	162
2	141	132	182	170	133	59	140	105	183	206	222	197
3	122	154	169	148	156	44	140	112	160	219	218	212
4	113	126	183	151	152	62	112	109	170	189	231	201
5	94	133	141	157	162	55	112	113	195	195	207	200
6	71	172	138	132	178	57	85	102	220	169	199	232
7	89	158	130	152	171	61	75	107	205	171	192	244
8	115	129	142	195	177	52	62	115	208	185	166	249
9	126	124	124	199	158	58	65	121	190	177	134	247
10	120	157	127	199	148	55	96	138	202	144	147	271
11	123	178	130	200	169	66	130	136	164	131	146	249
12	126	185	128	193	183	79	139	140	138	114	150	209
13	123	153	127	197	149	86	153	134	132	183	158	185
14	106	142	128	180	140	99	145	140	148	187	178	159
15	106	124	110	212	141	104	150	153	129	212	148	113
16	81	129	128	197	127	109	161	134	138	223	126	66
17	72	120	109	213	124	119	171	125	129	219	103	80
18	79	131	95	214	119	104	161	148	145	214	102	79
19	78	138	86	203	100	85	151	175	169	189	90	74
20	88	133	120	199	77	71	145	188	134	183	82	57
21	105	142	135	170	99	87	129	222	175	151	78	72
22	99	136	134	122	106	106	138	220	172	130	79	73
23	115	99	121	108	93	119	162	200	137	107	65	86
24	120	124	125	92	96	109	196	178	148	109	59	76
25	115	137	142	119	93	127	213	189	142	101	60	62
26	120	169	133	90	105	127	206	215	171	92	74	100
27	115	175	126	73	79	133	218	222	181	63	87	104
28	142	170	135	72	93	112	208	214	195	92	110	136
29	165		160	106	92	138	159	194	191	131	134	122
30	174		184	92	83	148	173	233	190	152	155	102
31	159		188		92		126	201		144		140
MEAN	114.4	143.5	133.8	156.2	126.0	89.8	144.2	158.2	169.3	161.2	135.6	147.1

1980 YEARLY MEAN = 154.6

* ZURICH R_Z SUNSPOT NUMBER REPLACED BY INTERNATIONAL R_I SUNSPOT NUMBER BEGINNING WITH JANUARY 1981 DATA.

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO
FLUX ADJUSTED TO 1 A.U., S_a

1981

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	189.7	207.3	224.4*	210.8*	188.0	149.6	175.4	183.9	248.3	210.6*	222.5*	230.7*
2	181.4	210.1	230.6*	211.2*	193.4	144.3	168.9	182.6	242.8	204.8*	241.3*	230.3*
3	173.1	205.4*	238.9*	221.2	206.5*	134.9	163.3*	192.4	229.0	195.5	255.3*	238.6
4	166.8	197.5	245.6*	219.7	221.2	133.8	165.9	190.6*	233.4	191.1	263.1	241.7
5	161.8	187.8	227.3	226.2	237.5	136.0	152.5	178.8	248.7	193.6*	254.1	260.0
6	157.4	185.4*	212.7	235.7	231.2	140.5	148.7	179.6	263.2*	200.3	244.6	262.1
7	168.6*	180.5*	201.4	242.3	234.2	146.7	149.8	173.0	262.5*	204.1*	241.4	275.6*
8	169.2	179.1	200.6*	268.8*	222.4*	146.7*	152.4	178.4	266.3*	200.7*	234.7*	287.8
9	167.0	176.7	202.9	287.7	218.6	152.8	150.8*	180.5	256.5	205.4*	232.6	292.4*
10	164.6	185.2	203.1	268.8*	217.7*	157.1	156.5*	182.0	247.6	213.4	231.0*	278.7
11	160.5	186.4*	199.7	272.1	228.1*	154.8	167.4	206.4	240.8	220.0	217.0	266.7*
12	156.6	190.6*	188.8	251.9	223.4	152.0	167.7*	209.0*	234.2	236.8*	223.5	254.2*
13	158.1	197.8	202.1	254.9*	221.3	152.6	174.2*	208.7	230.2	256.2	215.9	218.9
14	153.9	208.3	208.9	256.5*	232.5	159.1	184.2	208.2	228.7*	275.6	207.4	193.0
15	149.8	193.5	206.3*	254.9*	223.9	164.7	194.5*	225.1	230.4	287.1	191.2	172.6
16	152.5	186.9	194.9	247.5*	218.9	169.1	205.3*	221.8*	227.5	302.4	181.2	157.4
17	155.3	188.1*	181.5	242.7	207.6	171.2	208.8*	228.7	218.2*	302.9	172.7	144.2
18	161.8	198.2*	180.8	229.2	194.4	178.1	204.7*	244.1	216.5*	296.5*	160.8*	136.3*
19	165.4	178.8	175.1	214.9	186.6*	165.9	220.3	254.6*	210.5*	278.6	157.8	129.7
20	159.9*	188.3	182.7	208.9*	180.8	159.8	234.7*	269.8	208.1	257.8*	152.8	133.9
21	156.6	189.9*	189.5	196.1	180.4	153.6	228.1*	267.1*	191.2	238.2	153.9	142.2
22	156.4	199.5	189.4*	191.5	169.3*	156.1*	235.9	262.2*	183.0	218.6	152.7	145.9
23	156.8	217.9*	188.8*	204.9	159.6	171.2*	254.7*	254.8	183.8	208.2	151.9	153.0
24	157.3	231.5*	191.4	203.8*	169.8	174.6	261.6*	258.9	182.2	201.1	150.4	156.1*
25	169.2*	233.8	199.3	203.8*	177.2	183.6	259.7	254.9	182.0	186.0	159.1	162.1
26	174.6	238.5	198.6*	198.8	173.8	193.9	273.1*	272.9*	188.8	172.0	178.3*	166.2
27	175.8*	235.4	197.6	194.7*	177.0	193.4	255.8*	281.6*	202.8	171.2	190.3	176.8
28	197.2*	224.9*	203.7*	178.2*	181.3	191.6	223.6	275.3	200.9	182.4	206.4*	183.0
29	204.2	.	212.4*	176.9	178.6	187.5*	213.3	259.1	204.5	187.5	226.5*	183.6
30	209.1	.	208.2	175.3	164.6*	179.0	204.2*	265.1	203.8	201.5	231.6	185.7
31	209.1	.	214.8*	.	156.1	.	197.6	256.8*	.	207.1	.	182.8
MEAN	169.8	199.5	203.2	224.7	198.9	161.9	198.2	226.0	221.9	222.8	203.3	201.4

* adjusted for burst
A = interpolated data point

DAILY SOLAR INDICES

DECEMBER 1981

DAY OF MONTH	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	PROVISIONAL SUNSPOT NUMBERS		OBSERVED FLUX	SOLAR FLUX ADJUSTED TO 1 A.U.							
			R_I	$R_{A'}$	OTTAWA 2800	AFGL 15400	AFGL 8800	AFGL 4995	OTTAWA 2800	AFGL 2695	AFGL 1415	AFGL 606	AFGL 410	AFGL 245
1	335	17	162	190	237.3*				230.7*					
2	336	18	197	159	236.9*	549	297	229	230.3*		205	115	58	
3	337	19	212	171	245.7	618	337	244	238.6		206	113	49	
4	338	20	201	200	248.9	627	327	242	241.7		205	117	48	
5	339	21	200	208	267.8	631	371	266	260.0		231	126	52	
6	340	22	232	224	269.9	598			262.1					
7	341	23	244	209	284.1*	622	373	271	275.6*		229	120	52	
8	342	24	249	227	296.7	627	401	300	287.8	282	243			
9	343	25	247	241	301.4*				292.4*					
10	344	26	271	233	287.3	618	395	285	278.7	274	233	132	43	
11	345	27	249	213	275.2*	618	366	273	266.7*	257	220	129	51	
12	346	1	209	191	262.3*	611	367	265	254.2*	243	212	126	49	
13	347	2	185	179	225.9	610	323	230	218.9	214	186	131	49	
14	348	3	159	116	199.2	595	325	211	193.0	191	174			23
15	349	4	113	90	178.1	486	310	190	172.6	169	151	82	42	
16	350	5	66	66	162.6	580	297	170	157.4	152	135	80	41	
17	351	6	80	71	149.0	581	294		144.2		132	79		
18	352	7	79	74	140.8*	498	273		136.3*		127	65	45	
19	353	8	74	61	134.0	570	287		129.7		118	73	45	
20	354	9	57	43	138.3	561	290	156	133.9		120		49	18
21	355	10	72	65	146.9	575	290	168	142.2		128	73	51	
22	356	11	73	64	150.7	552	282	172	145.9		133	76	46	
23	357	12	86	72	158.2	416	245	160	153.0		136	65	39	
24	358	13	76	62	161.4*	577	293	179	156.1*		151	81	45	
25	359	14	62	85	167.6	551	295	180	162.1		163	83	47	
26	360	15	100	83	171.9	588	293	180	166.2		160	87	43	
27	361	16	104	91	182.8	506	303	189	176.8		178	89	42	
28	362	17	136	117	189.2	598	312	203	183.0		175	95	43	
29	363	18	122	114	189.9	623	421	244	183.6		226			
30	364	19	102	107	192.0				185.7					
31	365	20	140	100	189.0				182.8					
MEAN			147.1	133.1	207.8	577	322	217	201.4	223	176	97	46	21

*Adjusted for burst.
NOTE: Data gaps in AFGL Sagamore Hill data are due to equipment problems.

OBSERVED AND PREDICTED SOLAR ACTIVITY INDICES

	SUNSPOT NUMBERS						2800 MHz FLUX adjusted to 1 AU	
	Rz or R_I		Ra		Rs		Sa	
Date	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed
Jan 79	166.6	124	164.4	116	150.2	119	196.5	168
Feb	137.5	131	136.8	123	153.0	124	199.1	172
Mar	138.0	136	132.5	128	136.7	128	184.0	176
Apr	101.5	141	95.8	133	127.0	133	175.0	180
May	134.4	147	121.8	139	120.4	139	168.9	186
Jun	149.5	153	136.4	144	138.9	144	186.0	191
Jul	159.4	155	140.5	145	123.1	145	171.4	192
Aug	142.2	155	125.1	144	129.2	145	177.0	192
Sep	188.4	156	184.0	143	156.5	144	202.3	191
Oct	186.2	158	178.2	144	171.7	145	216.4	192
Nov	183.3	162	176.5	149	182.9	149	226.8	196
Dec	176.3	164	157.6	152	151.0	152	197.2	199
Jan 80	159.6	164	145.3	153	153.6	154	199.6	200
Feb	155.0	163	133.9	154	148.7	155	195.1	200
Mar	126.2	161	107.9	153	117.8	153	166.5	200
Apr	164.1	159	138.5	151	164.0	152	209.3	198
May	179.7	156	172.3	149	185.4	151	229.1	197
Jun	157.3	155	153.6	149	153.2	151	199.3	198
Jul	136.3	153*	136.0	144	144.1	151	190.8	197
Aug	135.4	150*	133.0	144	121.9	150	170.3	196
Sep	155.0	150*	150.0	146	138.8	152	185.9	198
Oct	164.7	150*	160.8	149	157.1	154	202.9	200
Nov	147.9	148*	149.9	149	168.5	153	213.4	199
Dec	174.4	142*	167.5	145	174.3	150	218.8	196
Jan 81	114.4†	140*	115.4	144	120.5	149	169.0	195
Feb	143.5†	141*	143.7	146	153.5	152	199.5	198
Mar	133.8†	143*	149.2	149	157.5	156	203.2	202
Apr	156.2†	143*	169.2	149	180.7	158	224.7	204
May	126.0†	143*	141.3	149	152.8	159	198.9	204
Jun	89.8†	141*	99.0	146	112.9	158	161.9	203
Jul	144.2†	139(± 4)*	154.3	144	152.1	156	198.2	---
Aug	158.2†	138(± 8)*	170.4	143	182.1	154	226.0	---
Sep	169.3†	137(±11)*	174.5	141	177.7	153	221.9	---
Oct	161.2†	135(±13)*	157.0	140	178.6	151	222.8	---
Nov	135.6†	132(±14)*	138.8	136	157.6	147	203.3	---
Dec	147.1†	128(±15)*	---	132	155.5	142	201.4	---
Jan 82	---	124(±15)*	---	128	---	137	---	---
Feb	---	120(±15)*	---	124	---	133	---	---
Mar	---	117(±16)*	---	121	---	130	---	---
Apr	---	114(±16)*	---	118	---	127	---	---
May	---	111(±15)*	---	115	---	123	---	---
Jun	---	108(±15)*	--	112	---	119	---	---

*An asterisk denotes either a value of the observed 12-month running mean or the predicted 12-month average that is based on preliminary observations of the Zurich and International relative sunspot numbers (R_Z and R_I). Parentheses enclose the 90% confidence limits. Shaded boxes enclose the most recent smoothed values; boxes not shaded enclose predicted values. Ra is the new symbol for R_A'. All tabulated entries of Ra are final values.

†R_I replaces R_Z as of January 1981.

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
CYCLE 21

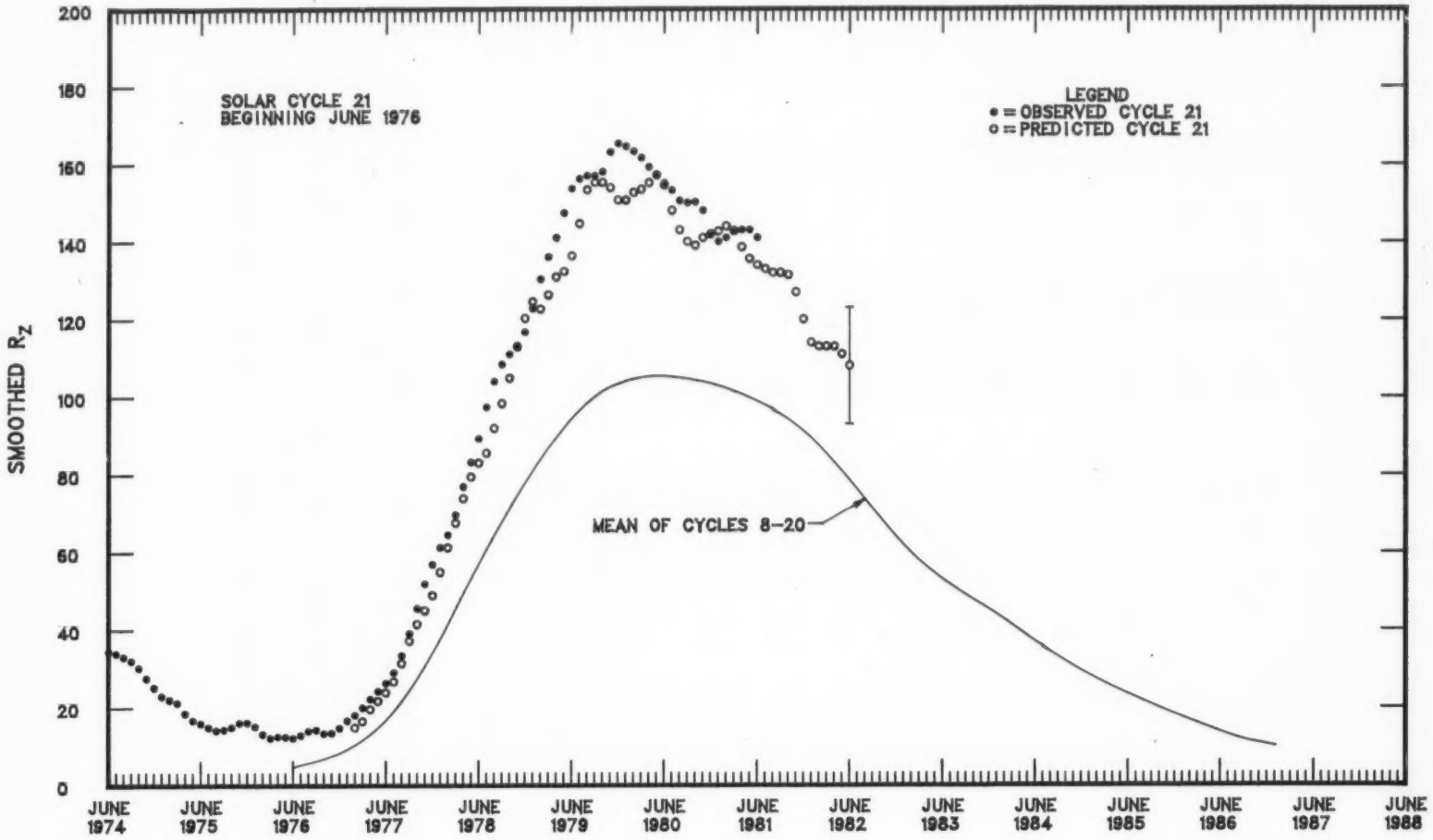
MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	15	13	12	13	13	12	13	14	14	13	14	15
1977	17	18	20	22	24	26	29	33	39	46	52	57
1978	61	65	70	77	83	89	97	104	108	111	113	118
1979	124	131	137	141	147	153	155	155	156	158	162	165*
1980	164	163	161	159	156	155	153	150	150	150	148	142
1981	140	141	143	143	143	141	139	138	137	135	132	128
							(4)	(8)	(11)	(13)	(14)	(15)
1982	124	120	117	114	111	108	104	99	94	89	85	82
	(15)	(15)	(16)	(16)	(15)	(15)	(14)	(10)	(9)	(8)	(8)	(9)
1983	78	75	73	71	68	65	64	62	61	61	60	59
	(9)	(10)	(11)	(13)	(16)	(18)	(19)	(21)	(23)	(24)	(25)	(25)
1984	58	56	52	49	47	47	46	44	42	40	39	37
	(26)	(26)	(26)	(27)	(28)	(29)	(29)	(29)	(28)	(27)	(26)	(26)
1985	36	35	34	34	33	32	30	29	29	28	27	26
	(26)	(25)	(24)	(24)	(24)	(23)	(22)	(21)	(20)	(21)	(22)	(22)
1986	26	25	23	22	20	18	16	15	15	14	14	14
	(23)	(23)	(22)	(22)	(21)	(20)	(20)	(19)	(17)	(16)	(15)	(13)
1987	13	13	13	14	15	16	17					
	(12)	(12)	(12)	(13)	(14)	(15)	(16)					

The table gives observed *smoothed* sunspot numbers for Cycle 21 up to the one calculated from the latest observed data, marked by a left-hand bracket. They are based on final Zürich numbers through 1980 and provisional International numbers thereafter. Some of these data after the June 1976 value will change slightly when final data for 1981 are included. The numbers after the bracket are predictions by the McNish-Lincoln method (see *Explanation of Data Reports*, February 1981). Shown in parentheses are the corresponding absolute values of the 90% confidence interval, an indication of the uncertainty above and below the predicted number.

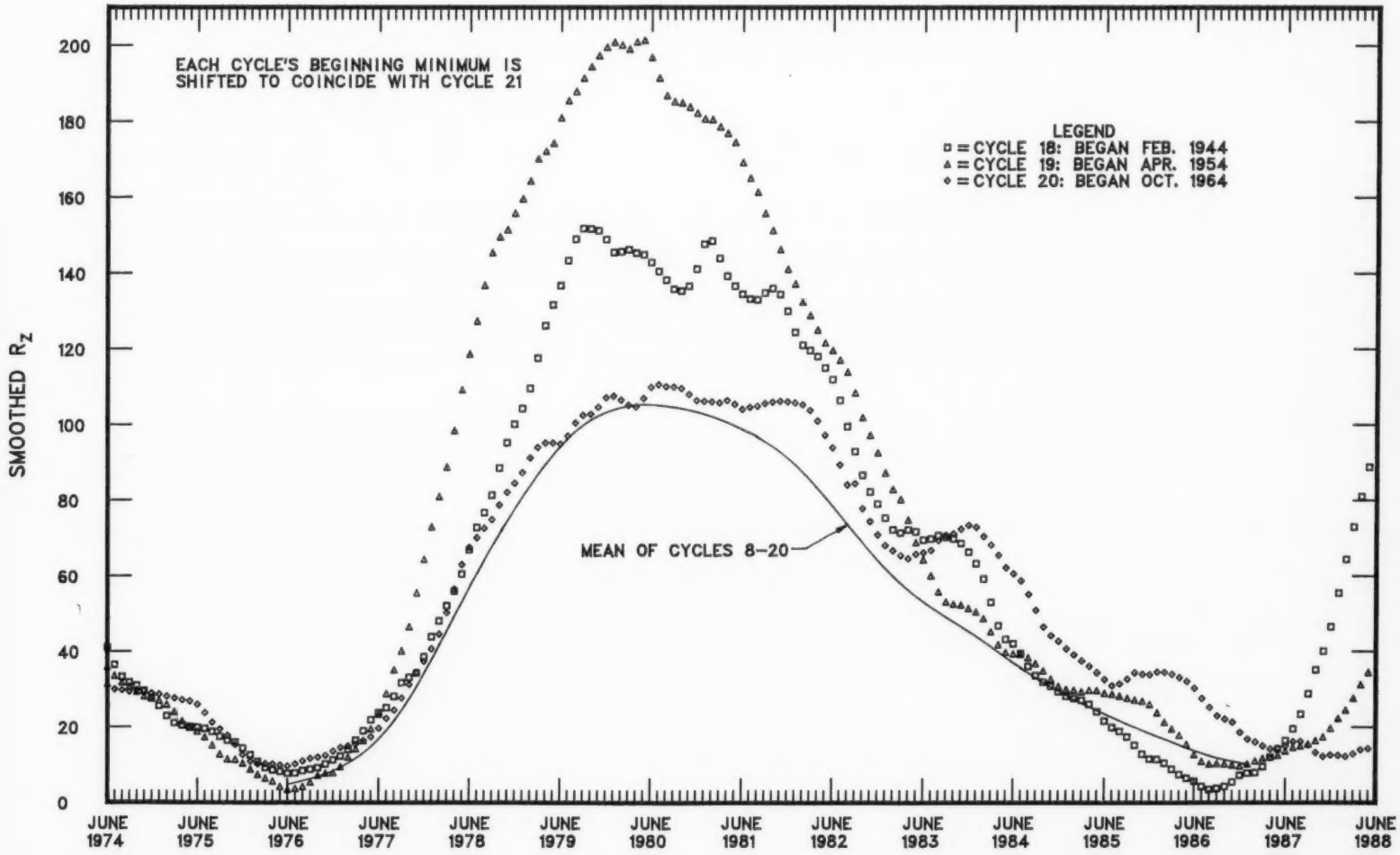
The McNish-Lincoln prediction method is recommended for predictions up to only one year ahead. From that point, the predictions regress rapidly toward the mean value. Furthermore, the method is very sensitive to the identification of a minimum epoch. In SGD issues 390-401, the Cycle 21 predictions were based on March 1976 as the minimum epoch. Later studies, including one published by Waldmeier, show that June 1976 is the more appropriate epoch of minimum. Thus, we adopted a June 1976 minimum.

*MAXIMUM OF SUNSPOT CYCLE 21. The maximum smoothed sunspot number occurred in December 1979.

OBSERVED AND ONE-YEAR-AHEAD PREDICTED SMOOTHED SUNSPOT NUMBERS



SUPERPOSITION OF CYCLES 18, 19, AND 20



Hα SOLAR FLARES

DECEMBER 1981

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
LEAR	01	0101	0105	0138	N15	W11	.330		1.9	37	1B	3	C		418		
PURP	01	0102E	0104	0143	N17	W12	.366		1.9	41	SB		C	0104	183	2.0	
LEAR	01	0111	0118	0120	S12	E03	.229		1.3	9	SF	3	C		39		
PALE	01	0121E	0125U	0132	N16	W09	.327		1.7	11	SF	3	C		21		
PALE	01	0216	0220	0233	N20	E65	.920		6.0	17	SF	3	C		30		
PALE	01	0237	0244	0303	N20	E66	.926		6.1	26	SF	3	C		24		
PEKG	01	0300	0304	0312	S10	W07	.224		1.6	12	SN		P	0304	50	.5	D
PALE	01	0301E	0303U	0314D	S10	E03	.196		1.4	13D	SN	2	C		32		
LEAR	01	0303	0308	0321	S11	W05	.223		1.5	18	SF	3	C		34		
PEKG	01	0310	0317	0340	N17	W11	.357		2.0	30	SN		P	0317	134	1.5	E
LEAR	01	0314	0315	0402	N16	W12	.353		2.0	48	SN	2	C		82		
PEKG	01	0315	0317	0335	N31	W03	.530		1.4	20	SN		P	0317	97	1.1	E
PEKG	01	0432E	0432	0511	N17	W13	.375		2.2	39	SN		P	0432	168	1.9	E
LEAR	01	0433	0442	0447	N18	E66	.924		6.1	14	SF	3	C		55		
PEKG	01	0435	0440	0450	N19	E65	.919		6.1	15	SN		P	0440	42		D
PEKG	01	0440	0444	0453	S10	W07	.224		1.7	13	SN		P	0444	63	.7	D
LEAR	01	0442	0443	0450	S10	W05	.208		1.6	8	SF	2	C		25		
LEAR	01	0545	0552	0618	N15	W13	.349		2.2	33	1N	3	C		300		
PEKG	01	0545	0553	0616	N16	W15	.382		2.4	31	SB		P	0553	176	1.9	EF
LEAR	01	0754	0755	0810	N16	W14	.372		2.4	16	SF	3	C		56		
PURP	01	0756E	0757	0802	N17	W13	.375		2.3	6	SN		C	0757	84	.9	E
LEAR	01	0815	0816	0823	N15	W16	.382		2.5	8	SF	3	C		45		
BUCA	01	0820		0855	N16	W18	.415		2.7	35	1N		C	0834	268	3.0	
ATHN	01	0824	0828	0926	N17	W13	.375		2.3	62	SB	2	C		127		
LEAR	01	0825	0842	0912	N15	W16	.382		2.6	47	2N	3	C		557		
CATA	01	0825	0845	0950D	N16	W16	.393		2.6	85D	1	2	P	0845	394	4.4	
HTPR	01	0827E		0905	N17	W18	.426		2.7	38	1B		C	0835	400	4.0	EFGH
LEAR	01	0836	0837	0847	S21	E55	.848		5.5	11	SF	3	C		26		
LEAR	01	0854	0913	0925	N06	E73	.957		6.8	31	1F	3	C				
HTPR	01	0912	0914	0920	N07	E72	.952		6.8	8	SB		C	0914	50		
ATHN	01	0913	0918	0929	N06	E73	.957		6.9	16	1N	2	C				
HTPR	01	0942	0944	0950	S02	E50	.767		5.2	8	SF		C	0944	20	.3	E
HTPR	01	1028	1030	1043	S20	E52	.820		5.3	15	SF		C	1030	30	.5	E
HTPR	01	1214	1215	1226	N18	W20	.459		3.0	12	SB		C	1215	80	.8	E TH
RAMY	01	1229	1237	1253	N19	E60	.884		6.0	24	SF	3	C		40		
HOLL	01	1454	1457	1505	N16	W20	.438		3.1	11	SF	2	C		22		
HOLL	01	1508	1508	1521	S10	W11	.267		2.5	13	SF	2	C		39		
HTPR	01	1511E		1529D	S10	W14	.304		2.7	18D	SB		C	1515	120	1.2	
HOLL	01	1529	1530	1546	N16	W22	.462		3.3	17	SF	3	C		28		
HOLL	01	1539	1541	1550	N20	E61	.893		6.2	11	SF	3	C		26		
HOLL	01	1543	1545	1605	N13	W58	.859		6.0	22	SF	3	C		21		
HOLL	01	1628	1631	1639	N13	E02	.243		1.8	11	SF	3	C		33		
HOLL	01	1654	1659	1810	N16	W19	.427		3.1	76	1B	3	C		240		
HOLL	01	1703	1715	1726	N21	E59	.880		6.1	23	SF	3	C		106		
LEAR	02	0001	0003	0011	S21	E46	.765		5.5	10	SF	3	C		27		
LEAR	02	0211	0213	0226	S12	W17	.361		3.4	15	SN	3	C		107		
LEAR	02	0244	0246	0250	N18	E55	.841		6.2	6	SF	3	C		34		
PEKG	02	0333	0350	0436D	S13	W08	.274		2.7	63D	1N		C	0350	421	4.5	FU
PURP	02	0334	0359	0444	S15	E00	.272		2.1	70	1N		C	0359	197	2.1	
LEAR	02	0341	0351	0352D	S15	W02	.274		2.3	11D	1N	3	C		393		
LEAR	02	0341	0353	0441	S12	W07	.251		2.7	60	1N	3	C		379		
LEAR	02	0432	0434	0443	S03	E39	.632		5.1	11	SF	3	C		39		
PEKG	02	0434	0436	0442	S03	E39	.632		5.1	8	SN		C	0436	38	.5	D
LEAR	02	0602	0602	0616	N11	W62	.889		6.9	14	SF	3	C		30		
LEAR	02	0654	0659	0711	S03	E38	.618		5.1	17	SF	3	C		56		
LEAR	02	0657	0659	0709	N04	E61	.876		6.9	12	SF	3	C		14		
PURP	02	0658E	0659	0713	S03	E39	.632		5.2	15	SN		C	0659	85	1.1	
LEAR	02	0856	0929	0945	N03	E58	.849		6.7	49	SN	3	C		67		
LEAR	02	0914	0916	0924	N16	W31	.572		4.7	10	SF	3	C		45		
CATA	02	0925E	0925	0935D	N29	W22	.594		4.0	10D	S	2	P	0925	56	.7	
LEAR	02	0928	0929	0952	N03	E58	.849		6.7	24	SN	3	C		67		
HTPR	02	1358	1359	1402	S10	W21	.399		4.2	4	SN		C	1359	50	.5	
HTPR	02	1431	1439	1508	N16	W31	.572		4.9	37	SF		C	1439	30	.3	E
HTPR	02	1514		1515D	N15	E90	1.000		9.4	1D	SF		C	1515	30		
HOLL	02	1544	1548	1553D	N08	E18	.342		4.0	9D	SF	2	C		21		
HOLL	02	1618	1618	1628	S01	E33	.545		5.2	10	SF	3	C		48		
HOLL	02	1830	1832	1855	S25	W61	.901		7.3	25	SN	3	C		72		
HOLL	02	2026	2033	2149	N15	W36	.628		5.6	83	1N	3	C		193		
PALE	02	2031	2032	2056D	N16	W37	.645		5.6	25D	SN	3	C		170		
LEAR	02	2354	2359	0008	N14	W34	.599		5.5	14	SF	3	C		43		

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
PEKG	03	0320	0325	0350	S15	W01	.270		3.2	30	SF		P	0325	29	.3	D
LEAR	03	0323	0324	0328	S15	E01	.270		3.2	5	SF	3	C		29		
PEKG	03	0349	0350	0355	N16	W39	.668		6.1	6	SF		P	0350	42	.6	E
LEAR	03	0350	0350	0354	N15	W39	.664		6.1	4	SF	3	C		48		
LEAR	03	0556	0603	0623	N11	W76	.972		8.9	27	SF	3	C				
LEAR	03	0559	0600	0615	N15	W39	.664		6.2	16	SF	3	C		28		
PEKG	03	0600	0605	0630	N13	W77	.976		9.0	30	SN		P	0605	34		D
PEKG	03	0628E	0629	0650	S16	W03	.291		3.5	22	SN		P	0629	46	.5	E
PEKG	03	0645	0649	0702	S09	W34	.577		5.8	17	SF		P	0649	25	.3	D
PURP	03	0647E	0647	0650	S11	W34	.584		5.8	3	SN		P	0647	98	1.2	
LEAR	03	0648	0648	0653	S11	W33	.571		5.8	5	SN	3	C		85		
HTPR	03	0819	0827	0837	N15	W40	.676		6.3	18	SF		C	0827	50	.7	
HTPR	03	0824	0837	0855	N30	W31	.676		5.7	31	SF		C	0837	30	.3	
LEAR	03	1000	1001	1005	N16	W42	.703		6.6	5	SF	2	C		52		
MONT	03	1026	1028	1034	N17	W42	.707		6.6	8	SF		C	1028	50		D
HTPR	03	1027	1029	1050	N17	W43	.718		6.7	23	SB		C	1029	100	1.4	
RAMY	03	1143	1322	1341	N16	W43	.714		6.7	118	SF	3	C		36		
RAMY	03	1219	1220	1226	S18	E22	.478		5.2	7	SF	3	C		24		
HTPR	03	1235	1308	1330	S15	W03	.274		3.7	55	SF		C	1308	120	1.2	E
HTPR	03	1319	1322	1324	N17	W45	.740		6.9	5	SF		C	1322	20	.3	
HTPR	03	1357	1412	1422	N17	W45	.740		7.0	25	SF		C	1412	40	.6	E
HOLL	03	1601E	1603	1612	N17	W46	.750		7.1	11	SN	3	C		80		
HOLL	03	1950	1952	1959	N15	W79	.983		9.8	9	SN	3	C				
HOLL	03	2008	2009	2015	N04	E36	.592		6.5	7	SN	3	C		31		
HOLL	03	2044	2046	2052	N15	W80	.986		9.9	8	1N	3	C				
HOLL	03	2142	2143	2150	N14	W81	.989		10.0	8	SF	3	C				
HOLL	03	2213	2217	2251	N16	W51	.799		7.8	38	SN	3	C		51		
LEAR	03	2220E	2229U	2249	N16	W51	.799		7.8	29	SF	3	C		41		
PALE	03	2224E	2226	2244D	N15	W51	.796		7.8	20D	SF	1	C		26		
LEAR	03	2250	2252	2315	N18	E28	.548		6.1	25	SF	3	C		105		
HOLL	03	2250	2251	2315	N19	E29	.568		6.1	25	SN	3	C		97		
HOLL	03	2316	2325U	2325D	N16	E61	.886		8.5	9D	SN	3	C		64		
LEAR	03	2328	2328	2336	N07	E66	.916		8.9	8	SF	3	C		20		
LEAR	04	0228	0235	0247	N07	E63	.893		8.8	19	SF	3	C		25		
LEAR	04	0304	0315	0334	N07	E62	.885		8.8	30	SN	3	C		64		
LEAR	04	0341	0345	0359	N18	E60	.881		8.7	18	SF	3	C		33		
LEAR	04	0547	0549	0552	N10	E41	.671		7.3	5	SF	3	C		21		
LEAR	04	0632	0635	0653	N18	E58	.865		8.6	21	SF	3	C		32		
LEAR	04	0718	0719	0724	N07	E61	.877		8.9	6	SF	3	C		29		
LEAR	04	0730	0732	0741	S20	E14	.418		5.4	11	SF	3	C		20		
LEAR	05	0025	0025	0031	N18	E49	.783		8.7	6	SF	3	C		28		
LEAR	05	0306	0316	0346	S04	E01	.079		5.2	40	SF	2	C		115		
PEKG	05	0310	0316	0333	S04	W01	.079		5.2	23	SN		C	0316	172	1.8	EF
PURP	05	0313E	0313	0352	S03	E00	.059		5.1	39	SF		P	0313	92	.9	
PALE	05	0318	0319	0333D	S03	E03	.079		5.4	15D	SF	3	C		90		
PEKG	05	0402	0407	0429	S04	E02	.084		5.3	27	SN		P	0407	50	.5	E
PEKG	05	0620	0622	0626	N10	E53	.806		9.2	6	SN		P	0622	46	.8	D
PEKG	05	0708	0710	0719	N22	E50	.805		9.0	11	SN		C	0710	84	1.4	D
PURP	05	0709E	0710	0717	N22	E49	.796		9.0	8	SB		C	0710	46	.8	E
HTPR	05	1002	1007	1026	N17	E40	.683		8.4	24	SN		C	1007	70	.9	E
CATA	05	1020E	1020	1025D	N16	E43	.713		8.7	5D	S	2	P	1020	84	1.2	
HTPR	05	1104	1107	1111	N09	E60	.870		10.0	7	SB		C	1107	60	1.2	
CATA	05	1105	1105	1115	N07	E60	.869		10.0	10	1	2	C	1105	112	2.3	
HTPR	05	1137	1139	1141	N09	E60	.870		10.0	4	SF		C	1139	40	.8	
HTPR	05	1159	1222	1400	N08	E40	.653		8.5	121	1N		C	1222	180	2.3	E
RAMY	05	1208	1220	1248	N07	E42	.676		8.7	40	SF	3	C		38		
CATA	05	1215E	1225	1230D	N05	E40	.647		8.5	15D	1	2	P	1225	225	3.0	
RAMY	05	1316	1317	1322	N08	E60	.869		10.1	6	SN	3	C		49		
HTPR	05	1317	1318	1321	N09	E59	.862		10.0	4	SN		C	1318	60	1.2	
HTPR	05	1432	1434	1442	N09	E46	.729		9.1	10	SF		C	1434	30	.5	
RAMY	05	1823	1834	1847	N08	E57	.843		10.0	24	SN	3	C		63		
RAMY	05	1908	1909	1933D	N15	W74	.964		11.3	25D	SF	3	C				
PALE	05	2018	2018	2033	S10	W60	.871		10.3	15	SF	3	C		14		
PALE	05	2140	2145	2151	N08	E57	.843		10.2	11	SN	3	C		45		
PURP	06	0109E	0112	0117	N09	E57	.843		10.3	8	SN		P	0112	72	1.3	
CATA	06	0820	0825	0825D	N17	E33	.599		8.8	5D	S	2	P	0825	84	1.1	
CATA	06	0945	0950	1025	N18	W02	.315		6.6	40	S	2	C	0950	56	.6	
CATA	06	1035E	1035	1055	N09	E31	.533		8.8	20	S	2	P	1035	112	1.4	

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
PEKG	07	0031	0059		S06	E90	1.000		13.8	28D	1N		P	0059	67		AE
PEKG	07	0147	0156	0208	N14	E22	.438		8.7	21	1N		C	0156	231	2.6	F
PURP	07	0157E	0159	0245	N14	E23	.451		8.8	48	SN		P	0159	157	1.8	
PEKG	07	0246E	0246	0300	S06	E90	1.000		13.9	14	SN		P	0246	46		AD
PEKG	07	0420E	0426	0433	N21	W17	.452		8.5	13	SN		P	0426	97	1.1	FU
PEKG	07	0425	0428	0440	N04	E19	.333		8.6	15	SN		C	0428	50	.5	E
PURP	07	0434E	0434	0437D	N07	E19	.346		8.6	3D	SN		V	0434	52	.6	
HTPR	07	1343E		1349D	S06	E85	.996		13.9	6D	SF		C	1343	40		
HOLL	07	1533	1601	1635	N11	E53	.807		11.6	62	SF	3	C		48		
HOLL	07	1555	1556	1623	N19	E15	.409		8.8	28	SF	3	C		44		
HOLL	07	1631	1638	1740	S16	E06	.296		8.1	69	SF	3	C		113		
HOLL	07	1705	1718	1742	S13	W51	.790		11.5	37	SF	3	C		15		
HOLL	07	1842	1847	1853	N20	E12	.396		8.7	11	SF	3	C		24		
HOLL	07	1902	1910	1919D	S14	W59	.867		12.2	17D	SN	3	C		91		
HOLL	07	1906	1917	1920D	N11	E51	.787		11.6	14D	SF	3	C		39		
HOLL	07	1946E	1949	2000	N08	E11	.236		8.6	14	SF	3	C		53		
HOLL	07	2144	2149	2208	S05	E78	.978		13.8	24	SN	3	C				
HOLL	07	2307	2322	2334	S06	E73	.957		13.4	27	SN	3	C				
PEKG	08	0037	0040	0050	S06	E75	.966		13.7	13	SF		P	0040	25		D
PEKG	08	0040E	0040		S14	W63	.898		12.8		SN		P	0040	55	1.2	E
PEKG	08	0303	0308	0316	N05	W23	.399		9.9	13	SN		C	0308	38	.4	E
PEKG	08	0303	0308	0312	N08	W18	.336		9.5	9	SN		C	0308	63	.7	E
PEKG	08	0306E	0308	0314	N08	E10	.221		8.9	8	SN		C	0308	50	.5	EK
PEKG	08	0306E	0310	0314	N08	E10	.221		8.9	8	SF		C	0310	55	.6	EH
PEKG	08	0307	0311	0316	N12	E20	.394		9.6	9	SF		C	0311	34	.4	D
PEKG	08	0308E	0308		S19	E66	.923		13.1		SN		P	0308	25		D
PEKG	08	0334	0336	0340	S17	E60	.878		12.6	6	SN		C	0336	46	1.0	E
PEKG	08	0400	0404	0412	N05	E05	.123		8.5	12	SF		C	0404	21	.2	EH
LEAR	08	0418	0426	0448	S06	E73	.957		13.7	30	1B	3	C				
PEKG	08	0420	0424	0433	S06	E73	.957		13.7	13	1B		C	0424	97		D
CATA	08	0640E	0640	0650	S07	E72	.952		13.7	10	S	2	P	0640	56		
CATA	08	0745E	0745	0810	N08	E07	.184		8.8	25	S	1	P	0745	169	1.8	
ATHN	08	0904	0908	0917	S06	E71	.946		13.7	13	SN	3	C				D
ATHN	08	0904	0911	0921	N19	E07	.346		8.9	17	SN	3	C		95		
CATA	08	0905E	0910	0915D	N18	E04	.316		8.7	10D	1	1	P	0910	197	2.1	
ATHN	08	1239	1243	1305	S06	E71	.946		13.9	26	SB	3	C				
RAMY	08	1258	1346	1355	N06	W06	.148		9.0	57	SN	3	C		103		
HOLL	08	1540	1540	1546	S16	E55	.834		12.8	6	SF	3	C		17		
HOLL	08	1545	1545	1605	N08	E02	.144		8.8	20	SF	3	C		24		
HOLL	08	1614	1614	1621	S04	E69	.934		13.9	7	SF	3	C		23		
HOLL	08	1633	1644	1703	S04	E68	.928		13.8	30	SN	3	C		65		
HOLL	08	1651	1708	1736	N20	W00	.342		8.7	45	SF	3	C		86		
RAMY	08	1656	1717	1746	N19	E01	.326		8.8	50	SN	3	C		89		
HOLL	08	1732	1737	1751	S16	E55	.834		12.9	19	SF	3	C		26		
HOLL	08	1734	1737	1745	S13	W70	.943		14.0	11	SF	3	C		16		
HOLL	08	1736	1737	1749	S06	E66	.915		13.7	13	SF	3	C		13		
HOLL	08	1809	1845	1940	S13	W70	.943		14.0	91	1N	3	C		195		
HOLL	08	1816	1817	1825	N11	E39	.647		11.7	9	SF	3	C		21		
HOLL	08	1829	1829	1845	N09	E12	.258		9.7	16	SF	3	C		21		
PEKG	09	0136	0149	0225	N20	W05	.350		9.4	49	1N		C	0149	328	3.6	FU
LEAR	09	0157E	0159U	0222	N19	W05	.334		9.5	25	SN	3	C		47		
LEAR	09	0327	0345	0506	N20	W06	.354		9.6	99	1B	3	C		398		
PEKG	09	0330	0349	0520	N21	W07	.374		9.7	110	2B		C	0349	820	9.1	FIZ
PURP	09	0333	0413	0525	N20	W05	.350		9.5	112	2N		C	0413	628	6.9	
MANI	09	0427	0428	0432D	N19	W07	.344		9.7	5D	SN	2	C		90		
LEAR	09	0548	0550	0555	S13	W79	.982		15.2	7	SN	3	C		22		
LEAR	09	0638	0646	0711	S17	E44	.725		12.6	33	1B	3	C		290		
PURP	09	0639	0646	0648D	S17	E46	.747		12.7	9D	1B		P	0646	236	3.5	
PEKG	09	0639	0645	0706	S17	E43	.714		12.5	27	2B		C	0645	429	6.4	F
ATHN	09	0640E	0642U	0710	S13	E43	.701		12.5	30	1B	4	C		318		
PEKG	09	0644	0700	0725	N20	W07	.359		9.8	41	SN		C	0700	160	1.8	FT
LEAR	09	0650	0701	0810	N19	W08	.349		9.9	80	SB	3	C		107		
ATHN	09	0702	0704	0726D	N20	W05	.350		9.7	24D	SB	4	C		127		
CATA	09	0710E	0710	0725D	N20	W08	.365		9.9	15D	1	2	P	0710	197	2.2	
PURP	09	0735	0736	0741	N18	W08	.335		9.9	6	SF		C	0736	26	.3	E
HTPR	09	1023E		1045D	N19	W06	.339		9.9	22D	SF		C	1036	150	1.5	E
HOLL	09	1509E	1509U	1543	N18	W12	.365		10.5	34	SN	3	C		45		
HOLL	09	1624	1633	1644	N03	W41	.657		12.8	20	SF	3	C		21		
HOLL	09	1626	1626	1633	S16	E41	.688		12.8	7	SN	3	C		92		
HOLL	09	1701	1702	1746	N03	W43	.683		12.9	45	SN	3	C		47		

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
HOLL	09	1708	1710	1757	N18	W13	.374		10.7	49	SN	3	C		46		
HOLL	09	1758	1803	1819	S13	E41	.677		12.8	21	SF	3	C		42		
HOLL	09	1817	1912U	2139	N10	W21	.393		11.3	202	3B	3	C		1793		
HOLL	09	1818	1826	1841	N17	W12	.352		10.7	23	SF	3	C		35		
HOLL	09	1836	1842	1859	N03	W44	.696		13.1	23	SB	3	C		142		
HOLL	09	1838	1841	1912	S15	E39	.660		12.7	34	SN	3	C		107		
HOLL	09	1855	1912U	1916D	N12	W16	.339		11.0	21D	3B	3	C		1973		
PALE	09	1903E	1906U	1914D	N21	W15	.431		10.9	11D	2B	1	C		497		
HOLL	09	1954	1956	2007	S14	E37	.632		12.6	13	SN	3	C		38		
HOLL	09	2131	2142	2235	S08	E23	.411		11.6	64	SN	3	C		79		
HOLL	09	2212	2213	2229	S16	E38	.652		12.8	17	SB	3	C		71		
PURP	10	0105E	0105	0107	N10	W11	.253		10.9	2	SN		P	0105	46	.5	E
PEKG	10	0152	0156	0200	S18	E33	.601		12.6	8	SF		P	0156	63	.8	E
PURP	10	0157E	0157	0158	N08	E32	.542		12.5	1	SN		P	0157	59	.8	D
PURP	10	0353E	0354	0356	N11	W12	.277		11.1	3	SN		P	0354	72	.8	E
PEKG	10	0453E	0454	0505D	N21	W20	.477		11.7	12D	SN		P	0454	168	2.0	E
PEKG	10	0454E	0454	0458	N07	W19	.344		11.6	4	SN		C	0454	151	1.7	E
LEAR	10	0908	0909	0916	S18	E29	.553		12.6	8	SF	3	C		88		
HTPR	10	1112	1113	1124	N02	W57	.839		14.7	12	SF		C	1113	60	1.2	
HTPR	10	1112	1124	1133	N09	W32	.545		12.9	21	SN		C	1124	120	1.3	
HTPR	10	1114		1207D	N06	W33	.551		12.9	53D	SN		C	1135	80	.9	E
CATA	10	1120	1125	1205D	N08	W32	.542		12.9	45D	1	2	P	1125	197	2.4	
ATHN	10	1133	1135	1147	N09	W30	.517		12.7	14	SB	3	C		127		
RAMY	10	1342E	1342U	1416	N19	W26	.525		12.5	34	SF	3	C		59		
RAMY	10	1401	1417	1540	N03	W57	.839		14.9	99	SF	3	C		64		
RAMY	10	1522	1539	1543	S15	E27	.507		12.7	21	SF	3	C		51		
HOLL	10	1532	1532	1547	N18	W26	.517		12.6	15	SB	3	C		53		
RAMY	10	1536	1537	1602	N19	W27	.537		12.7	26	SF	3	C		136		
HOLL	10	1539	1539	1549	S15	E28	.520		12.8	10	SF	3	C		41		
HOLL	10	1630	1635	1658	N16	W22	.451		12.3	28	SN	3	C		60		
HOLL	10	1707	1712	1735	N07	W25	.436		12.6	28	1N	3	C		219		
HOLL	10	1741	1750	1814	N04	W59	.858		15.2	33	SF	3	C		49		
HOLL	10	1805	1819	2016	N20	W27	.545		12.8	131	SN	3	C		92		
HOLL	10	1946	1954	2011	N10	W28	.493		12.9	25	SF	3	C		62		
HOLL	10	2001	2003	2011	S17	E25	.497		12.7	10	SF	3	C		43		
HOLL	10	2024	2037	2105	S14	E24	.461		12.6	41	SF	3	C		51		
HOLL	10	2025	2046	2104	N18	W27	.529		12.9	39	SF	3	C		39		
HOLL	10	2102	2111	2146	N07	W09	.195		11.6	44	SF	3	C		97		
HOLL	10	2104	2110	2132	N19	W51	.803		14.7	28	SF	3	C		44		
HOLL	10	2107	2150	2245D	N18	W28	.541		13.0	98D	SN	3	C		155		
PALE	10	2148E	2221U	2323D	N16	W31	.565		13.2	95D	SN	3	C		113		
PALE	11	0010E	0015	0027	N19	W31	.583		13.3	17	SN	3	C		36		
LEAR	11	0017	0020	0028	N19	W29	.559		13.2	11	SF	3	C		27		
LEAR	11	0102	0132	0155	S13	E23	.439		12.8	53	SF	3	C		76		
PALE	11	0107	0108U	0122	N17	W32	.582		13.4	15	SF	3	C		11		
PALE	11	0133	0200	0202	N19	W32	.595		13.5	29	SF	3	C		45		
PALE	11	0133	0133	0144	S13	E23	.439		12.8	11	SF	3	C		20		
LEAR	11	0135	0135	0141	S08	E36	.597		13.8	6	SF	3	C		25		
PALE	11	0225	0233	0239	N17	W32	.582		13.5	14	SF	3	C		20		
LEAR	11	0226	0228	0248	N18	W32	.588		13.5	22	SN	3	C		38		
PEKG	11	0229	0230	0234	N19	W33	.607		13.6	5	SN		P	0230	126	1.6	D
PEKG	11	0304	0307	0310	N18	W32	.588		13.5	6	SN		C	0307	109	1.4	E
LEAR	11	0304	0307	0324	N19	W32	.595		13.5	20	SN	3	C		92		
PALE	11	0306	0313U	0317D	N17	W33	.595		13.6	11D	SN	2	C		44		
PEKG	11	0306	0307	0310D	S13	E23	.439		12.9	4D	SF		P	0307	21	.2	D
PURP	11	0308E	0312	0338	S14	E23	.447		12.9	30	SN		P	0312	111	1.2	
LEAR	11	0349	0350	0352	N16	W32	.577		13.6	3	SF	3	C		23		
PEKG	11	0440	0446	0458	N19	W34	.618		13.7	18	SF		C	0446	92	1.2	ET
PURP	11	0445	0448	0454	N17	W32	.582		13.6	9	SN		C	0448	92	1.2	
LEAR	11	0727	0729	0809	N21	W34	.630		13.9	42	SN	3	C		52		
PEKG	11	0740	0744	0758	S05	E01	.083		11.4	18	1N		C	0744	252	2.6	E
LEAR	11	0742	0746	0829	S07	W00	.115		11.3	47	SN	3	C		181		
PURP	11	0747	0749	0756D	S07	E02	.121		11.5	9D	SN		P	0749	79	.8	E
LEAR	11	0815	0820	0840	S07	E33	.553		13.8	24	SF	3	C		67		
LEAR	11	1017	1017	1023	N08	W37	.611		14.2	6	SF	3	C		32		
PALE	11	2155E	2155U	2209D	S06	E25	.432		13.8	14D	SB	3	C		100		D
PALE	11	2326E	2327U	2356D	S07	W09	.194		12.7	30D	SN	3	C		40		
LEAR	11	2332E	2334	0007	S07	W08	.180		12.6	35	SF	2	C		110		
LEAR	12	0031	0034	0041	N18	W43	.716		15.2	10	SF	3	C		23		

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.	TANCE	COND.	TYPE	TIME UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
PEKG	12	0054	0057	0105	S06	W09	.183		12.7	11	SN		P	0057	71	.7	E
LEAR	12	0144	0147	0208	N02	W75	.966		17.7	24	SF	3	C				
LEAR	12	0321	0330	0417	N02	W75	.966		17.8	56	1B	3	C				
LEAR	12	0402	0402	0407	N20	W48	.775		15.8	5	SF	3	C		33		
LEAR	12	0417	0423	0440	N20	W45	.745		15.6	23	SN	3	C		74		
PEKG	12	0421	0422	0428	N22	W46	.762		15.6	7	SN		C	0422	42	.7	D
PEKG	12	0453	0455	0508	S05	W12	.222		13.1	15	SF		C	0455	55	.6	E
LEAR	12	0453	0453	0504	S07	W11	.221		13.0	11	SF	3	C		70		
LEAR	12	1025	1025	1029D	S07	W15	.281		13.6	4D	SF	3	C		33		
PALE	12	1838E	1900U	1902D	N09	W59	.860		17.2	24D	SF	3	C		48		
LEAR	13	0225	0226	0244	N10	W15	.303		14.2	19	SF	3	C		51		
PEKG	13	0226	0227	0240	N11	W17	.339		14.4	14	SF		C	0227	71	.8	E
LEAR	13	0722	0722	0735	S11	W10	.248		14.1	13	SF	3	C		28		
WEND	13	1301	1303	1314	S06	E05	.128		13.9	13	SF		C	1303	44	.5	
WEND	13	1341	1342	1348	N11	E62	.886		18.2	7	SN		C	1342	25	.6	
PALE	13	1913E	1915U	1927	S07	W33	.552		16.3	14	SF	3	C		54		
PALE	13	2025	2038U	2100	N10	W90	1.000		20.6	35	SF	3	C				
PALE	13	2129	2129U	2142D	N20	W68	.935		19.0	13D	SN	2	C		57		
HOLL	13	2251	2256	2311D	S06	W01	.095		14.0	20D	SF	3	C		39		
HOLL	13	2254	2255	2304	N07	W73	.957		19.4	10	SF	3	C				
LEAR	14	0131	0134	0206	N07	W71	.946		19.4	35	SF	3	C		63		
LEAR	14	0213	0214	0226	S19	W66	.921		19.0	13	SN	3	C		43		
LEAR	14	0232	0238	0308	N11	E56	.834		18.3	36	SF	3	C		86		
PEKG	14	0235	0239	0252	N11	E55	.825		18.2	17	SN		P	0239	63	1.2	E
PEKG	14	0330	0334	0345	S06	W39	.633		17.1	15	SN		P	0334	84	1.1	E
LEAR	14	0331	0334	0343	S06	W38	.620		17.0	12	SF	3	C		81		
PURP	14	0333E	0333	0343	N10	E55	.824		18.3	10	SN		P	0333	66	1.2	
LEAR	14	0404	0406	0422	S17	W17	.396		15.4	18	SF	3	C		33		
LEAR	14	0434	0440	0449	S07	W38	.621		17.0	15	SF	3	C		36		
PEKG	14	0543	0546	0555	S06	W40	.646		17.2	12	SF		P	0546	21	.3	D
LEAR	14	0816	0822	0837	S06	W06	.139		14.8	21	SN	3	C		172		
HOLL	14	1617E	1617U	1634	S07	W13	.249		15.7	17	SF	2	C		40		
HOLL	14	1943	1949	2006	N19	W90	1.000		21.6	23	SB	3	C				
HOLL	14	2017	2018	2021	N11	W61	.878		19.4	4	SF	3	C		21		
HOLL	14	2042	2053	2134	S05	W14	.252		15.9	52	SN	3	C		194		
PALE	14	2044	2053	2139	S06	W13	.242		15.8	55	SN	3	C		121		
PALE	14	2047	2048	2105	S09	W52	.792		18.8	18	SF	3	C		41		
PALE	14	2056	2057	2115	N06	W61	.875		19.4	19	SN	3	C		124		
HOLL	14	2056	2056	2118	N07	W61	.876		19.4	22	SN	3	C		94		
LEAR	15	0055	0101	0137	S05	W16	.284		16.2	42	SN	3	C		184		
LEAR	15	0233	0234	0243	S08	W49	.758		18.8	10	SF	3	C		30		
LEAR	15	0312	0313	0317	S17	W37	.640		17.9	5	SF	3	C		30		
LEAR	15	0348	0348	0358	S11	W33	.564		17.6	10	SF	3	C		23		
LEAR	15	0438	0438	0448	S07	W20	.356		16.7	10	SF	3	C		21		
LEAR	15	0735	0739	0749	S08	W53	.801		19.3	14	SF	3	C		38		
CATA	15	0740	0745	0745D	S07	W55	.821		19.4	5D	S	1	P	0745	28	.5	
LEAR	15	0817	0818	0837	S18	W37	.645		18.1	20	SN	3	C		69		
LEAR	15	0846	0847	0917	S06	W20	.352		16.9	31	SF	3	C		75		
RAMY	15	1225	1226	1233	S05	W56	.830		19.7	8	SF	3	C		38		
RAMY	15	1440	1443	1543	S07	W57	.840		19.9	63	SF	3	C		18		
HOLL	15	1615	1622	1630	S09	W57	.841		20.0	15	SF	3	C		40		
HOLL	15	1622	1628	1629	S18	W45	.736		19.1	7	SF	3	C		29		
HOLL	15	1759	1801	1804	S07	W26	.448		17.7	5	SF	3	C		40		
HOLL	15	1833	1855	1911	S09	W59	.860		20.2	38	SN	3	C		29		
HOLL	15	1925	1929	1957	S05	W58	.849		20.2	32	SF	3	C		33		
PALE	15	1928	1931	1944	S07	W53	.801		19.8	16	SF	3	C		30		
PALE	15	1945	1948	1953	N18	W90	1.000		22.6	8	SB	3	C				
PALE	15	2059	2110	2114	S09	W53	.802		19.8	15	SF	3	C		15		
HOLL	15	2103	2106	2118	S08	W28	.482		18.0	15	SN	3	C		52		
PALE	15	2107E	2109	2114	S08	W28	.482		18.0	7	SF	3	C		32		
HOLL	15	2247	2247	2307	S08	W62	.884		20.6	20	SF	3	C		15		
PALE	15	2333	2335	2353	S08	W62	.884		20.6	20	SF	3	C		35		
PALE	15	2344	0012	0123	S20	W44	.732		19.3	99	SF	3	C		33		
PALE	16	0147	0155	0213	S18	W49	.777		19.7	26	SF	3	C		20		
LEAR	16	0401	0405	0507	S06	W30	.505		18.4	66	1F	3	C		205		
LEAR	16	0623	0623	0626	S06	W36	.592		19.0	3	SN	3	C		27		
LEAR	16	0850	0852	0856	S17	W53	.814		20.3	6	SF	3	C		38		
HTPR	16	1303	1307	1314	S17	W47	.754		20.1	11	SF		C	1307	40	.6	E

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
HTPR	16	1425		1436D	N13	E10	.268		17.4	11D	SN		C	1434	150	1.5	E
RAMY	16	1429	1429	1455	N13	E09	.258		17.3	26	SN	3	C		64		
PALE	17	0201	0211	0309	S06	W46	.721		20.5	68	SF	3	C		39		
LEAR	17	0548	0551	0558	S22	W52	.816		21.1	10	SF	3	C		17		
RAMY	17	1842	1850	1901	S05	W56	.829		22.0	19	SF	3	C		45		
HOLL	17	1847	1850	1916	S06	W56	.830		22.0	29	SF	3	C		66		
HOLL	17	2049	2050	2101	N12	E02	.191		18.0	12	SF	3	C		33		
HOLL	17	2206	2216	2223	S06	W56	.830		22.1	17	SF	3	C		39		
HOLL	17	2216	2217	2245	S09	W41	.663		21.0	29	SF	3	C		33		
LEAR	17	2329E	2333U	2348	S14	W48	.757		21.6	19	SF	2	C		45		
LEAR	18	0530	0533	0548	S06	W58	.849		22.6	18	SF	3	C		50		
LEAR	18	0952	0959	1014	S06	W60	.866		22.9	22	SF	3	C		79		
HOLL	18	1539	1549	1605	S06	W73	.956		24.1	26	SF	2	C		17		
HOLL	18	1547E	1548U	1559D	S09	E09	.205		19.3	12D	SN	3	C		43		
HOLL	18	1727	1732	1734	N14	W21	.413		20.3	7	SF	3	C		26		
PURP	19	0731E	0741	0741D	S10	E16	.310		20.5	10D	SN		P	0741	20	.2	DG
CATA	19	0740	0745	0750D	S09	E16	.303		20.5	10D	S	2	P	0745	56	.6	
LEAR	19	0746	0747	0751	S11	E00	.167		19.3	5	SF	3	C		26		
LEAR	19	0753E	0753U	0800	N13	W25	.459		21.2	7	SF	3	C		55		
LEAR	20	0328	0329	0339	N08	E52	.790		24.0	11	SF	3	C		22		
WEND	20	0937	0941	0947D	N08	E48	.746		24.0	10D	SN		C	0941	47	.7	
CATA	20	0940E	0945	1000	N08	W48	.746		24.0	20	S	2	P	0945	112	1.8	
LEAR	21	0303	0303	0325	S09	W27	.467		23.2	22	SN	3	C		37		
LEAR	22	0946	0946	0958	S24	E38	.681		25.3	12	SF	3	C		23		
WEND	22	1107E		1134	S25	E36	.666		25.2	27	SF		C	1108	69	1.0	
RAMY	22	1400	1410	1413	S24	E35	.649		25.2	13	SF	3	C		28		
HOLL	22	1619	1619	1630	N23	E59	.874		27.1	11	SF	3	C		13		
HOLL	22	1759	1811	1819	S24	E34	.639		25.3	20	SF	3	C		74		
HOLL	22	1955	1955	1959	N12	E19	.366		24.3	4	SF	3	C		28		
HOLL	22	2136	2138	2145	N23	E56	.850		27.1	9	SF	3	C		126		
HOLL	22	2259	2259	2306	S24	E32	.617		25.4	7	SF	3	C		20		
LEAR	23	0630	0630	0635	S25	E28	.581		25.4	5	SF	3	C		41		
RAMY	23	1734	1736	1754	S23	E21	.490		25.3	20	SN	3	C		156		
HOLL	23	1735	1737	1752	S23	E21	.490		25.3	17	SN	3	C		127		
RAMY	23	1753	1757	1816	S21	E51	.801		27.6	23	SN	3	C		140		
HOLL	23	1754	1757	1811	S20	E51	.798		27.6	17	SN	3	C		96		
LEAR	24	0855E	0915U	0917D	S23	E43	.727		27.6	22D	SF	2	C		66		
RAMY	24	1750	1844	1937	N22	E33	.613		27.2	107	SB	3	C		152		
HOLL	24	1752	1753	1804	S22	E37	.658		27.5	12	SF	3	C		52		
HOLL	24	1827	1827	1842	S22	E37	.658		27.5	15	SN	3	C		47		
HOLL	24	1834	1845	1915	N23	E32	.608		27.2	41	SB	3	C		190		
HOLL	24	1909	1915	1919	S24	E35	.647		27.4	10	SF	3	C		71		
HOLL	24	2053	2056	2153	S21	E37	.653		27.6	60	SF	3	C		164		
HOLL	24	2242	2243	2257	S23	E34	.630		27.5	15	SF	3	C		87		
LEAR	24	2242	2244	2301	S23	E34	.630		27.5	19	SF	3	C		65		
LEAR	25	0035	0043	0053	S07	W77	.974		30.8	18	SF	3	C				
PURP	25	0039	0040	0055	S08	W90	1.000		31.8	16	1N		C	0040	52		
PURP	25	0055	0100	0106	N22	E29	.566		27.2	11	SN		C	0100	46	.6	E
LEAR	25	0206	0206	0212	N14	W03	.212		25.3	6	SF	3	C		28		
PURP	25	0207E	0207	0217	N16	W03	.245		25.3	10	SN		P	0207	66	.7	E
LEAR	25	0234	0240	0249	S10	E44	.700		28.4	15	SF	3	C		20		
PURP	25	0235	0251	0320	S12	E46	.727		28.6	45	1B		C	0251	302	4.4	
LEAR	25	0352	0352	0402	N22	E26	.532		27.1	10	SF	3	C		56		
LEAR	25	0535	0535	0601	N22	E24	.510		27.0	26	SF	3	C		31		
LEAR	25	2259E	2304U	2308	S13	E30	.524		28.2	9	SF	3	C		84		
HOLL	25	2302	2304	2309D	S12	E30	.520		28.2	7D	SF	2	C		67		
LEAR	25	2323	2323	2326	S13	E75	.965		31.6	3	SF	3	C				
PURP	26	0547E	0549	0603	S16	E17	.369		27.5	16	SN		C	0549	85	1.0	
HOLL	26	1643	1645	1659	S12	E48	.749		30.3	16	SF	3	C		29		
HOLL	26	1750	1803	1837	S11	E47	.736		30.3	47	SF	3	C		132		
HOLL	26	1805	1807	1820	S22	E23	.497		28.5	15	SF	3	C		44		
LEAR	26	2311E	2319U	2424	N20	E02	.306		27.1	73	SF	3	C		21		

Hα SOLAR FLARES

DECEMBER 1981

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
LEAR	27	0024	0026	0036	N09	W42	.673		30.2	12	SF	3	C		45		
PURP	27	0028E	0028	0030	N10	W39	.636		29.9	2	SF		V	0028	39	.6	EG
LEAR	27	0038	0040	0047	S12	E42	.679		30.2	9	SF	3	C		32		
LEAR	27	0158	0204	0457	S13	E17	.342		28.4	179	1N	3	C		219		
PALE	27	0159	0203	0235	S13	E19	.369		28.5	36	SN	3	C		114		
PURP	27	0201E	0314	0600	S13	E16	.328		28.3	239	2B		P	0314	923	10.4	
LEAR	27	0220	0224	0252	S12	E41	.666		30.2	32	SF	3	C		43		
PALE	27	0222	0230	0239	S11	E42	.677		30.2	17	SF	3	C		26		
PALE	27	0239	0245	0340D	S15	E24	.452		28.9	61D	SN	3	C		47		
LEAR	27	0256	0314	0420	S21	E19	.444		28.5	84	SF	3	C		91		
LEAR	27	0909	0909	0942	S20	E14	.381		28.4	33	SN	3	C		114		
CATA	27	1140E	1140	1200	S12	E35	.588		30.1	20	S	2	P	1140	112	1.4	
LEAR	27	2257	2259	2309	S20	E06	.321		28.4	12	SF	3	C		62		
LEAR	27	2304	2304	2341	N19	W12	.350		28.9	37	SF	3	C		27		
LEAR	27	2347	2347	2351	N17	E36	.620		30.7	4	SF	3	C		20		
LEAR	28	0009	0011	0017	S13	E31	.536		30.3	8	SF	3	C		21		
LEAR	28	0031	0033	0105	N17	E36	.619		30.7	34	SF	3	C		40		
LEAR	28	0124	0125	0131	N17	E36	.619		30.8	7	SF	3	C		25		
LEAR	28	0127	0129	0144	S20	E05	.312		28.4	17	SF	3	C		56		
PURP	28	0128E	0132	0141	S21	E04	.324		28.4	13	SN		P	0132	39	.4	E
LEAR	28	0147	0149	0159	N17	E36	.619		30.8	12	SF	3	C		36		
LEAR	28	1025	1026	1031	N23	E73	.958		2.9	6	SF	3	C				
WEND	28	1223	1225	1227	N18	E29	.536		30.7	4	SF		C	1225	9	.1	
WEND	28	1305E	1326	1428	N19	W18	.409		29.9	83	1N		C	1326	200	2.3	
HOLL	28	1616	1632	1649	N18	E27	.510		30.7	33	SF	3	C		79		
HOLL	28	1630	1638	1647	S23	W35	.638		31.3	17	SF	3	C		28		
HOLL	28	1824	1832	1904	N25	E75	.968		3.4	40	1F	3	C				
RAMY	28	1827	1828	1840D	N17	E26	.490		30.7	13D	SB	3	C		80		
PALE	28	1828E	1828U	1910	N17	E26	.490		30.7	42	SN	3	C		53		
HOLL	28	1858	1901	1905	S11	E19	.353		30.2	7	SF	3	C		32		
HOLL	28	1937	1938	1944	N06	E57	.838		2.1	7	SF	3	C		15		
PALE	28	2028	2057	2301D	N09	E64	.898		2.7	153D	1N	3	C		160		
HOLL	28	2130E	2133	2144	N16	E55	.827		2.0	14	SF	3	C		45		
HOLL	28	2130E	2155U	2250	N07	E55	.819		2.0	80	1N	2	C		150		
HOLL	28	2139	2147	2151	S12	E18	.345		30.3	12	SF	3	C		52		
HOLL	28	2141	2142	2148	N17	E24	.465		30.7	7	SB	3	C		134		
PALE	28	2144E	2144U	2206D	N17	E24	.465		30.7	22D	SF	3	C		83		
PALE	28	2335E	2341		N09	E64	.898		2.8	25	SF	3	C		30		
PEKG	29	0225	0227	0231	N16	E23	.443		30.8	6	SF		P	0227	46	.5	D
PALE	29	0309	0311	0331	N17	E19	.400		30.6	22	SF	3	C		24		
PEKG	29	0612	0615	0616	S13	E14	.298		30.3	4	SF		P	0615	59	.6	E
LEAR	29	0638	0642U	0642D	N21	W30	.567		31.5	4D	SF	3	C		21		
HOLL	29	2046	2049	2119	S21	W21	.462		31.4	33	SN	3	C		141		
HOLL	29	2050	2053	2059	N20	E13	.367		30.8	9	SF	3	C		35		
PEKG	30	0105	0108	0115	N19	E10	.325		30.8	10	SN		P	0108	34	.4	D
PEKG	30	0150	0153	0247	N20	W38	.655		1.9	57	SN		C	0153	139	2.0	EK
PEKG	30	0150	0236	0247	N19	W41	.685		2.2	57	1N		C	0236	320	4.7	FU
PEKG	30	0324E	0324U		N04	E39	.629		2.1		SF		P	0324	118	1.6	E
PEKG	30	0455	0501	0515	N17	E05	.260		30.6	20	SN		C	0501	122	1.3	E
PEKG	30	0608	0610	0620	S19	W41	.685		2.3	12	SN		C	0610	55	.8	E
WEND	30	0819E		0849D	N05	E37	.602		2.1	30D	1N		C	0819	212	2.8	
WEND	30	0825	0826	0830	S22	W24	.504		1.2	5	SF		C	0826	50	.6	
WEND	30	0840	0842	0846	S22	W24	.504		1.2	6	SF		C	0842	50	.6	
CATA	30	0840	0840	0845	S21	W24	.495		1.2	5	S	2	C	0840	84	1.0	
WEND	30	0936E	0936	1004	S21	W27	.530		1.4	28	SN		C	0936	100	1.2	
RAMY	30	1815	1846	1853	N19	W53	.812		3.7	38	SF	3	C		39		
HOLL	30	1831	1844	1854	N19	W57	.848		4.0	23	SF	3	C		72		
HOLL	30	2030	2048	2126	N06	E29	.486		2.0	56	1N	3	C		368		
LEAR	30	2217E	2222	2247	N19	W58	.857		4.3	30	1N	3	C		221		
HOLL	30	2219	2222	2239	N18	W60	.872		4.4	20	1N	3	C		205		
LEAR	30	2324	2325	2333	N16	W01	.230		31.0	9	SF	3	C		42		
LEAR	30	2353	0001	0014	N16	W02	.232		31.1	21	SN	3	C		114		

Hα SOLAR FLARES

DECEMBER 1981

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
PEKG	31	0415E	0415	0425	N21	W64	.904		5.0	10	SN		C	0415	50	1.2	E
PEKG	31.	0640	0649	0700D	N05	E23	.391		2.0	20D	SF		C	0649	17	.4	D
PEKG	31	0714	0718	0722	N19	W63	.896		5.0	8	SF		C	0718	46	1.1	E
PEKG	31	0720E	0720	0728	S19	W38	.649		3.2	8	SF		C	0720	63	1.5	E
HOLL	31	2153E	2200U	2241	N18	W67	.922		5.9	48	SN	3	C		100		

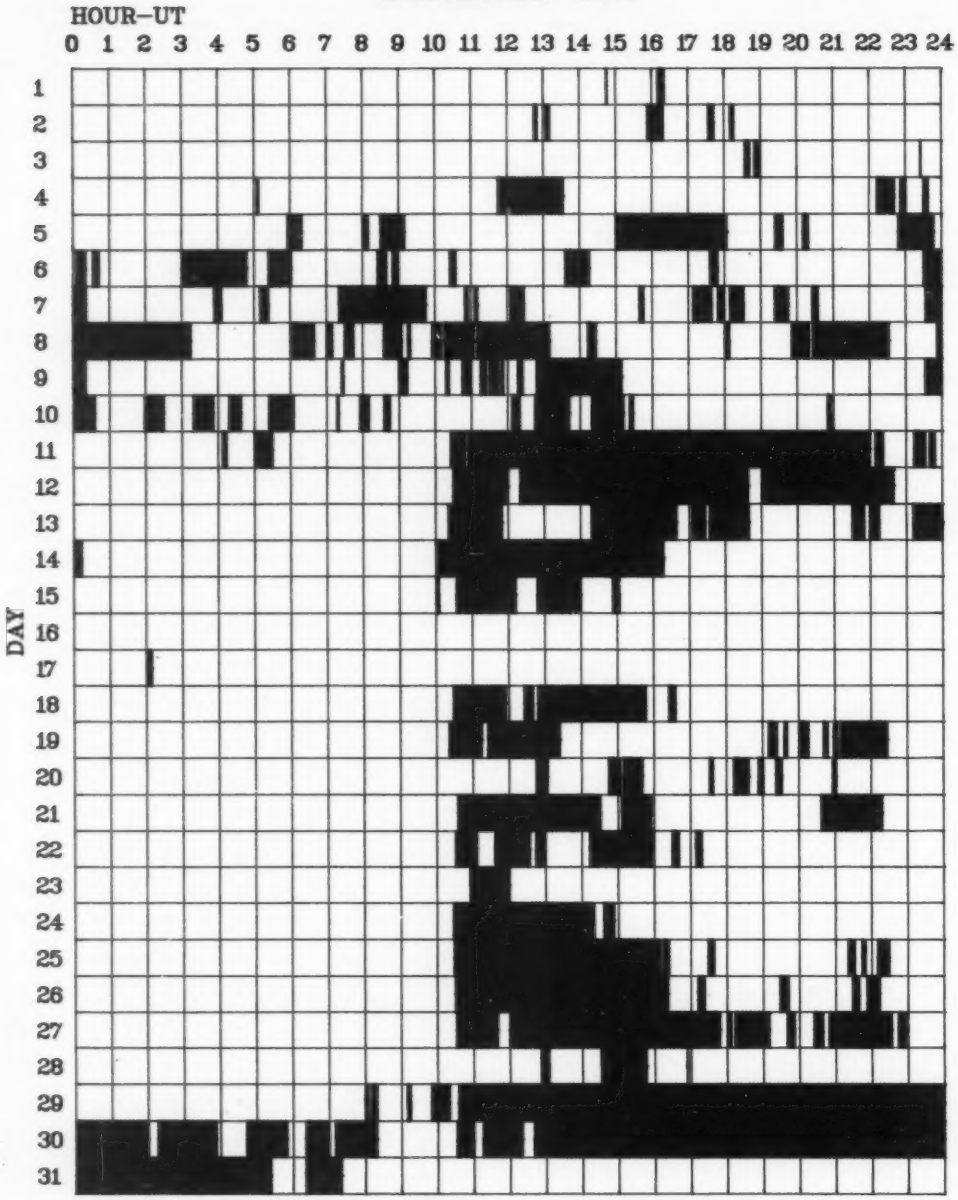
"REMARKS":

A = Eruptive prominence whose base is less than 90° from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by high-speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the H and K lines of CaII.
P = Flare shows helium D3 in emission.
Q = Flare shows Balmer continuum in emission.
R = Marked asymmetry in H-alpha line suggests ejection of high-velocity material.
S = Brightness follows disappearance of filament in same position.
T = Region active all day.
U = Two bright branches, parallel or converging.
V = Occurrence of an explosive phase: important, expansion within roughly 1 minute that often includes a significant intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide H-alpha line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

DECEMBER 1981



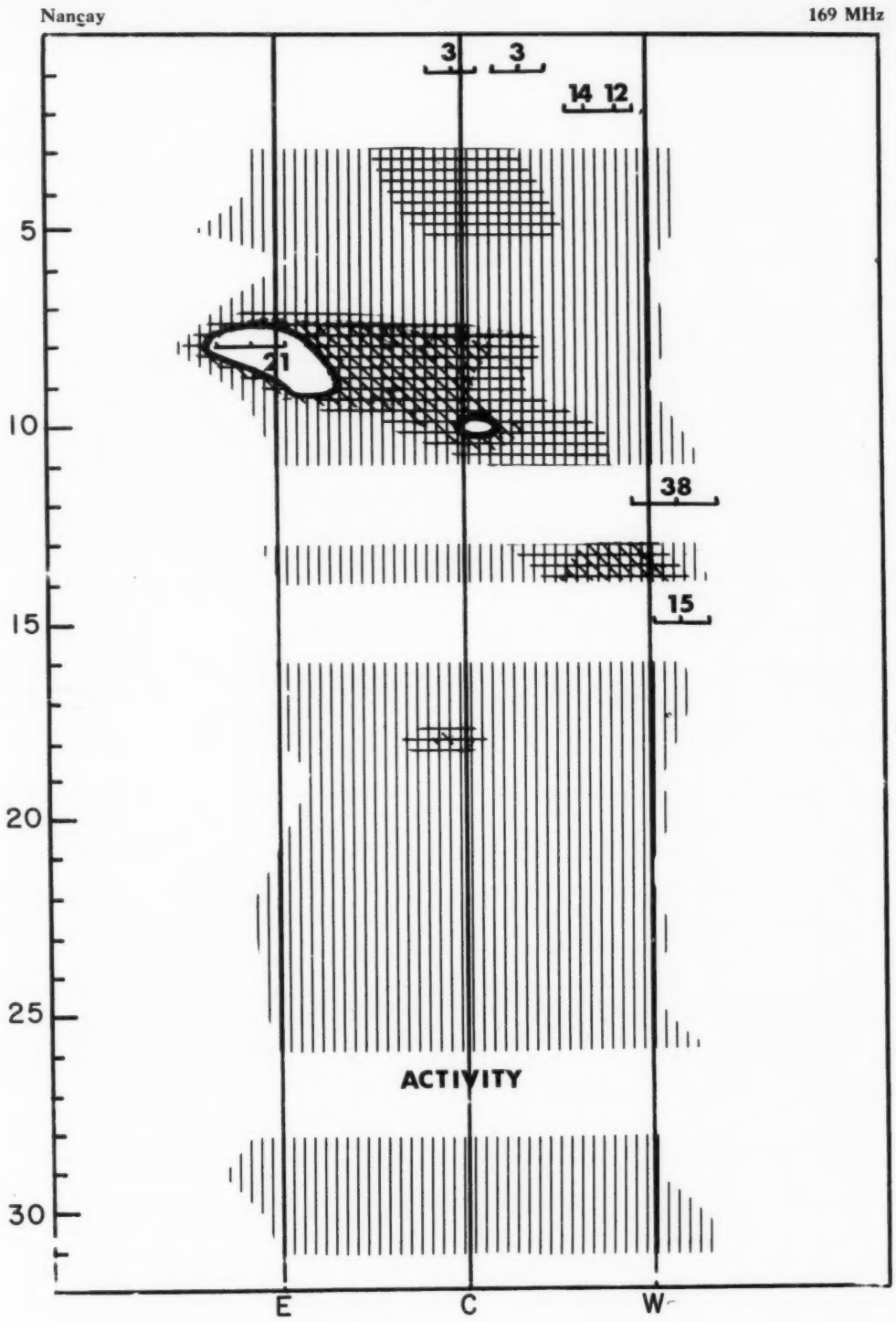
Observatories included in total patrol:

Bucharest	Haute Provence	Learmonth	Palehua	Purple Mt.
Catania	Holloman	Monte Mario	Peking	Ramey
				Wendelstein

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

DECEMBER 1981

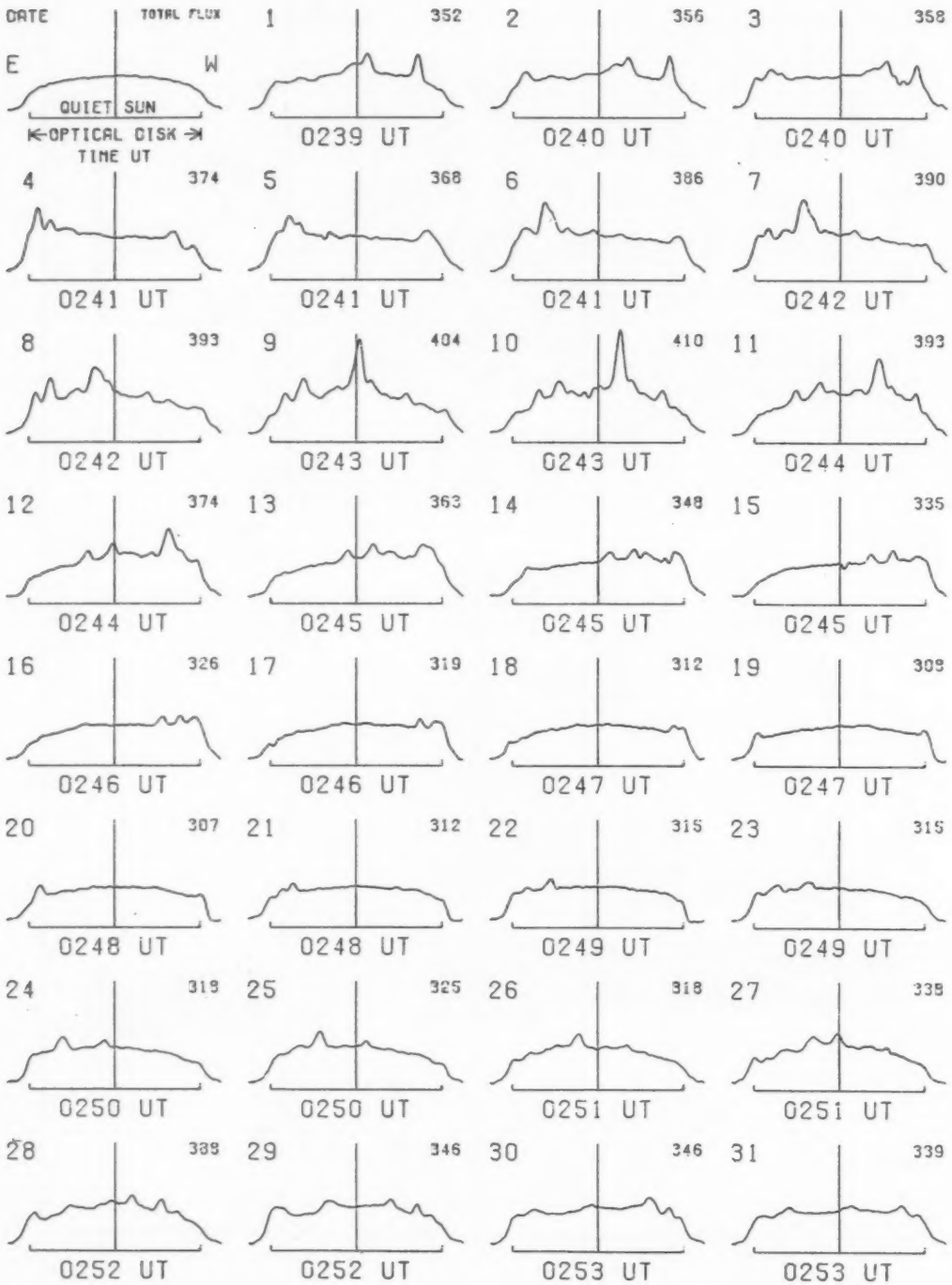


EAST-WEST SOLAR SCANS

DECEMBER 1981

TOYOKAWA, JAPAN

3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC

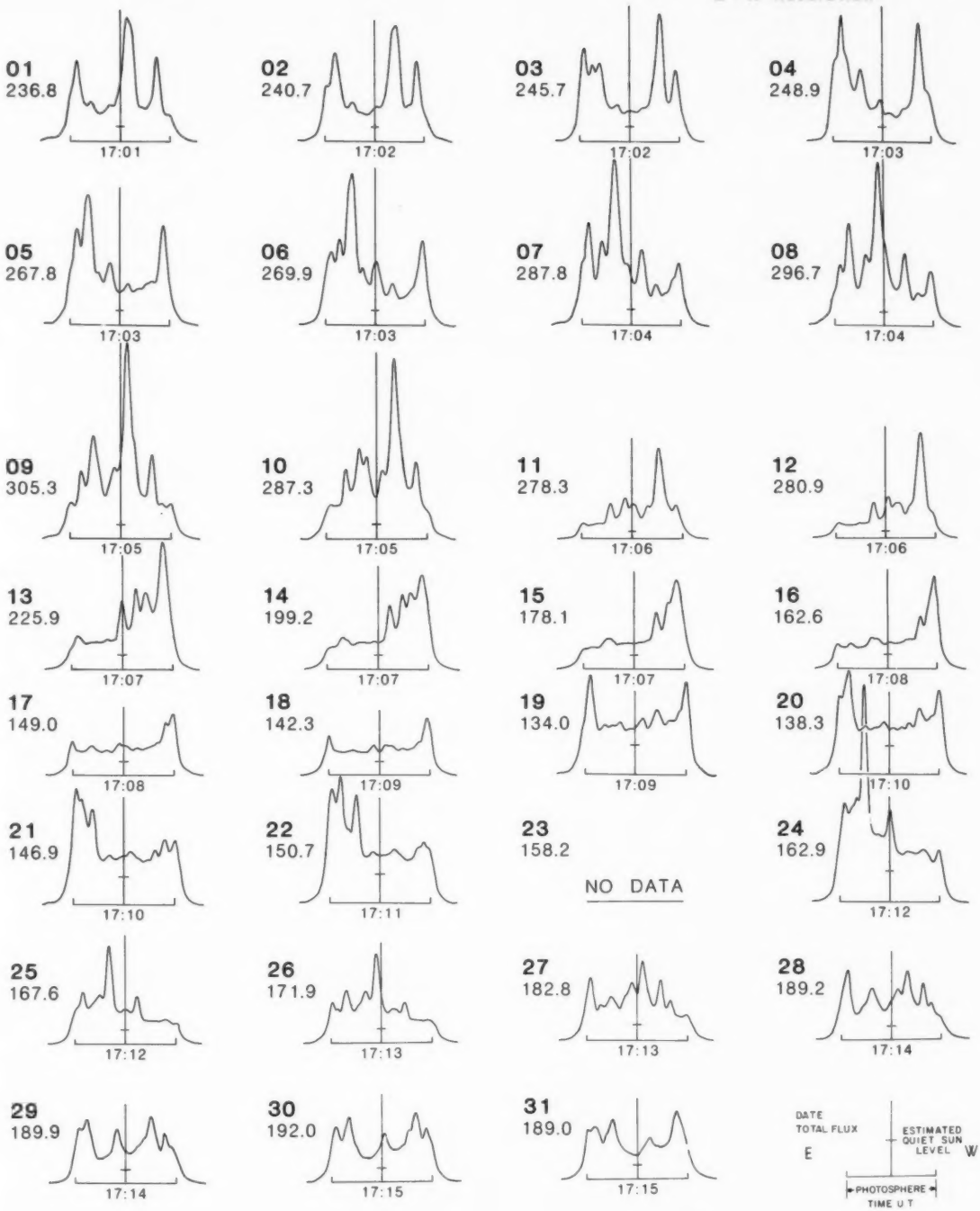


EAST-WEST SOLAR SCANS

DECEMBER 1981

ALGONQUIN RADIO OBSERVATORY
CANADA

10·7 cm
Fan Beam with 1·5 minutes of arc
E-W Resolution

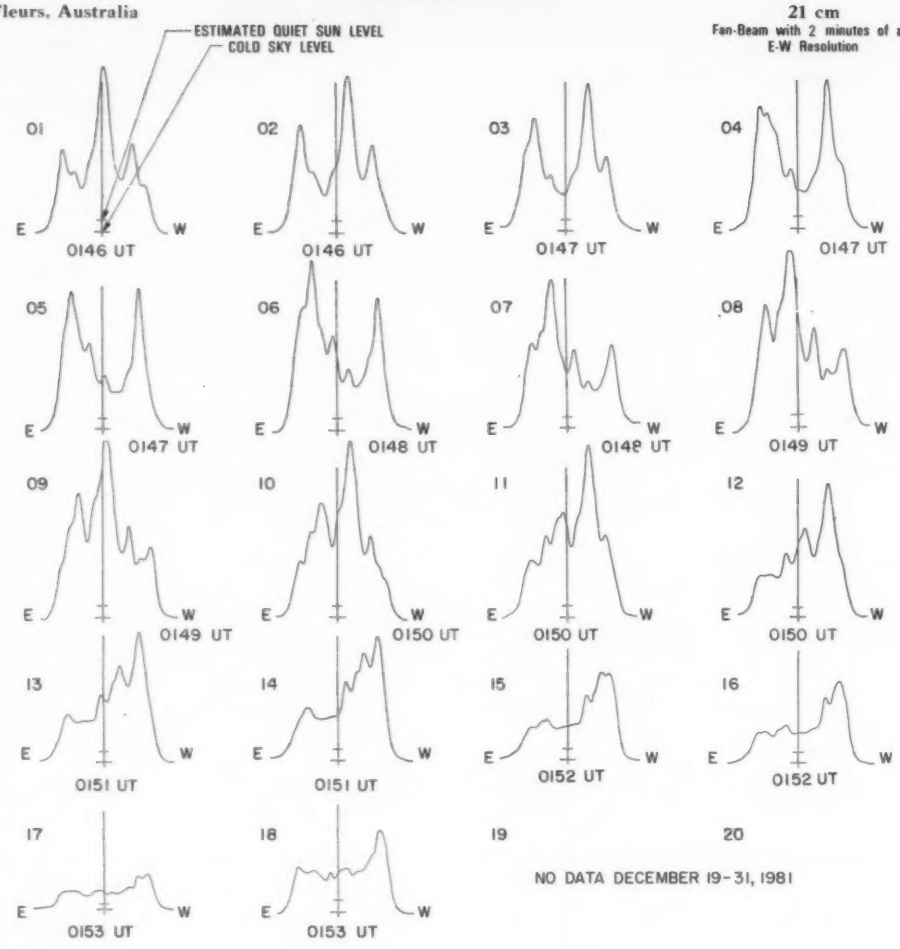


EAST-WEST SOLAR SCANS

DECEMBER 1981

Fleurs, Australia

21 cm
Fan-Beam with 2 minutes of arc
E-W Resolution

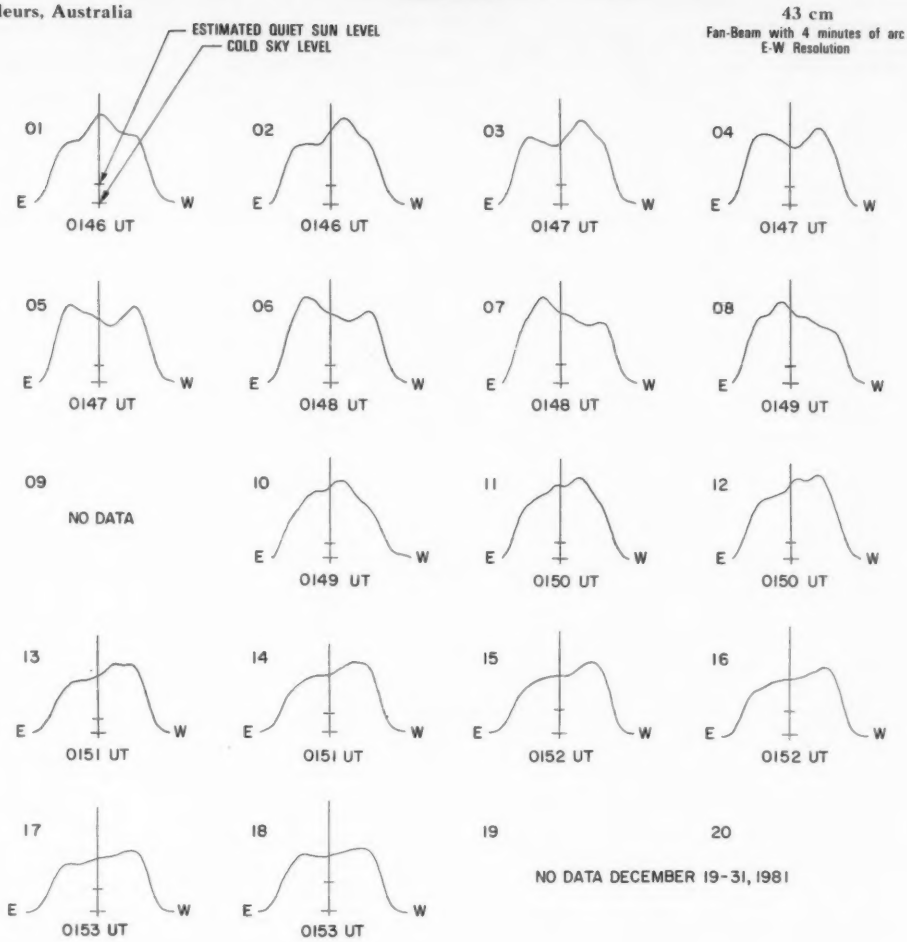


EAST-WEST SOLAR SCANS

DECEMBER 1981

Fleurs, Australia

43 cm
Fan-Beam with 4 minutes of arc
E-W Resolution



SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS
DECEMBER 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
01	8800	LEAR	4 S/F	0100.5	0104.1	3.8	18			
	2695	LEAR	4 S/F	0100.6	0100.8	3.7	21			
	2695	LEAR	8 S	0110.8	0111.1	.7	20			
	8800	LEAR	4 S/F	0126.1	0128.0	5.7	15			
	2695	PALE	8 S	0302.8	0303.0	.3	17			
	8800	LEAR	4 S/F	0549.3	0557.1	19.0	07			
	3200	BERN	22 GRF	0826.8	0839.2	25.0	12.0			ONLY PAPER REC
	2695	ATHN	8 S	0838.3	0839.1	1.8D	11			
	8800	ATHN	8 S	0838.6	0839.1	1.4	08			
	8800	LEAR	47 GB	0838.6	0843.3	15.2	31			
	2695	LEAR	47 GB	0838.8	0839.1	14.3	11			
	2695	ATHN	4 S/F	1213.0	1214.0	2.5D	19			
	3200	BERN	3 S	1213.3	1214.4	5.0	18.0			ONLY PAPER REC
	2800	OTTA	21 GRF	1440.0	1710	280.0	19.0	8.4		
	2800	OTTA	3 S	1507.2	1507.7	1.5	11.8	4.0		
	2800	OTTA	20 GRF	1540.0	1545	30.0	7.2	3.6		
	2695	PENT	3 S	1704.0	1705	3.0	61.0	20.4		
	8800	SGMR	8 S	1704.5	1704.8	.8	31			
	2695	PENT	3 S	1708.0	1709	3.0	34.0	13.0		
	8800	SGMR	47 GB	1710.3	1710.5	8.8	32			
	2695	PENT	3 S	2128.8	2129.5	1.5	10.6	5.0		
02	2695	LEAR	8 S	0543.3	0543.5	.8	11			
	8800	LEAR	8 S	0543.3	0543.3	.8	13			
	8800	MANI	3 S	0543.7	0544.2	1.3	33.5	11.2		
	2695	MANI	3 S	0543.8	0544.1	1.2	13.1	4.		
	2800	OTTA	24 R	1535.0	1548	13.0	3.8	1.4		
	2800	OTTA	27A RF	1535.0		110.0	3.8	3.3		
	2800	OTTA	24P R	1548.0		82.0	3.8			
	2695	PENT	4 S/F	1705.0	1707.3	5.0	46.0	11.0		
	2800	OTTA	26 FAL	1710.0	1725	15.0	-3.8	-1.9		
	2800	OTTA	3 S	2031.0	2032	3.0	10.6	4.6		
03	2695	LEAR	4 S/F	0555.8	0558.1	4.3	11			
	8800	LEAR	4 S/F	0555.8	0557.3	3.0	11			
	2695	LEAR	4 S/F	0646.8	0647.3	2.7	28			
	8800	LEAR	4 S/F	0647.1	0647.3	572.1	47			
	2695	MANI	3 S	0647.5	0648.0	2.5	26.3	8.8		
	2695	ATHN	4 S/F	0647.6	0648.1	2.9D	15			
	3200	BERN	4 S/F	1014.4	1015.2	2.5	27.0			ONLY PAPER REC
	2800	OTTA	240 R	1450.0	1510	20.0	3.8	1.9		
	2800	OTTA	20 GRF	1605.0	1612	35.0	4.8	2.4		
	2800	OTTA	21 GRF	1728.0	1745	105.0	9.6	5.0		
	2800	OTTA	45 C	1737.0	1737.4	2.5	9.6	3.2		
	2800	OTTA	8 S	1810.7	1810.9	.5	3.4			
	2800	OTTA	8 S	1900.9	1901	.2	3.8			
	2800	OTTA	2 S/F	1950.0	1950.5	1.0	4.8			
04	2695	PALE	8 S	0239.8	0240.0	.3	26			
	2800	OTTA	24 R	1440.0	1455	15.0	3.0	1.0		
	2800	OTTA	27A RF	1440.0		240.0	3.0	2.7		
	2800	OTTA	24P R	1455.0		195.0	3.0			
	2800	OTTA	4 S/F	1725.0	1728	8.0	135.0	25.0		
	8800	SGMR	4 S/F	1726.8	1728.3	4.5	130			
	8800	PALE	47 GB	1727.6	1728.3	1.7	180			
	2695	PALE	8 S	1727.6	1727.8	.7	130			
	2800	OTTA	29 PBI	1733.0	1733	20.0	5.0	2.3		
	2800	OTTA	26 FAL	1810.0	1840	30.0	-3.0	-1.5		
	2800	OTTA	8 S	1948.8	1948.9	.2	7.2			
05	2695	LEAR	47 GB	0021.8	0024.8	6.3	11			
	8800	LEAR	47 GB	0022.5	0024.8	5.5	16			
	8800	PALE	8 S	0320.1	0321.1	1.4	31			
	2695	PALE	8 S	0320.5	0321.1	1.0	31			
	2695	LEAR	4 S/F	0707.3	0708.1	2.7	17			
	3200	BERN	3 S	1103.3	1104.2	3.0	39.0			ONLY PAPER REC
	2695	ATHN	4 S/F	1103.5	1104.0	2.1D	48			
	3200	BERN	3 S	1137.4	1138.0	2.5	28.0			ONLY PAPER REC
	3200	BERN	3 S	1315.9	1316.8	2.0	14.0			ONLY PAPER REC
	2800	OTTA	20 GRF	1430.0	1547	150.0	8.0	3.7		
	8800	PALE	4 S/F	1737.0	1737.6	6.1	34			
	2800	OTTA	21 GRF	1905.0	1925	95.0	9.6	4.8		
	2800	OTTA	45 C	1909.0	1912	4.0	6.6			
06	3200	BERN	4 S/F	1033.8	1034.6	3.5	17.0			
	2800	OTTA	1 S	1635.0	1635.3	3.0	2.4	1.2		
	2800	OTTA	1 S	1723.0	1723.4	3.0	3.8	1.8		
	2800	OTTA	21 GRF	1800.0	1855	190.0	8.6	3.0		
	2800	OTTA	3 S	1954.0	1958.5	16.0	34.0	8.6		
07	2800	OTTA	21 GRF	1340.0	1510	140.0D	8.6			
	8400	BERN	3 S	1450.4	1451.1	4.0	125.0			
	2800	OTTA	1 S	1542.0	1542.2	2.0	3.4	1.7		
	2800	OTTA	21 GRF	1635.0	1645	50.0	5.6	4.0		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS
DECEMBER 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
07	2800	OTTA	40 F	1637.0	1640.2	4.0	9.4			
	2800	OTTA	21 GRF	1815.0	1830	115.0	4.6	3.0		
	2800	OTTA	1 S	1846.0	1849	5.0	7.0	3.5		
	2800	OTTA	40 F	1901.9	1902	3.0	3.8			
	8800	SGMR	8 S	1903.6	1904.0	.2	13			
08	8800	LEAR	8 S	0033.8	0034.0	1.3	18			
	8800	PALE	8 S	0033.8	0034.0	.3	23			
	8800	LEAR	4 S/F	0143.3	0144.8	2.3	13			
	2695	LEAR	4 S/F	0305.0	0307.0	4.0	16			
	8800	LEAR	4 S/F	0305.8	0308.0	3.2	08			
	2695	ATHN	4 S/F	0523.6	0525.1	3.9D	370			
	8800	LEAR	8 S	0645.0	0645.6	1.0	08			
	8400	BERN	3 S	1114.2	1114.7	2.0	53.0			
	3200	BERN	3 S	1123.6	1127.3	13.0	14.0			
	8400	BERN	3 S	1235.6	1236.8	6.0	25.0			
	2800	OTTA	21 GRF	1415.0	1427	25.0D	6.2			
	2800	OTTA	1 S	1421.5	1421.8	1.0D	7.8	3.8		
	2800	OTTA	40 F	1522.8	1525	5.3	11.2			
	2800	OTTA	20 GRF	1710.0	1714	70.0D	8.4			
	2800	OTTA	22 GRF	1826.0	1827	16.0	4.4	2.2		
	2800	OTTA	1 S	1844.0	1846	5.0	4.0	2.6		
	2695	PENT	20 GRF	1930.0	2007	80.0	4.8	2.4		
	8800	LEAR	4 S/F	2325.3	2326.6	8.0	13			
09	8800	LEAR	4 S/F	0132.1	0145.3	13.9	17			
	2695	LEAR	4 S/F	0133.1	0138.1	12.9	13			
	8800	PALE	4 S/F	0133.1	0135.6	4.7	76			
	2695	PALE	8 S	0241.0	0241.3	.3	22			
	8800	LEAR	8 S	0333.1	0333.3	.9	13			
	2695	LEAR	47 GB	0341.6	0343.3	20.0	30			
	8800	LEAR	47 GB	0341.8	0343.5	19.8	119			
	2695	MANI	4 S/F	0342.0	0343.4	3.0	21.3	7.1		
	8800	MANI	4 S/F	0342.5	0343.5	2.5	104.4	34.8		
	2695	LEAR	47 GB	0401.6	0420.0	23.4	38			
	8800	LEAR	47 GB	0401.6	0402.8	23.4	86			
	8800	LEAR	4 S/F	0504.3	0505.3	4.2	30			
	2695	LEAR	47 GB	0640.8	0644.1	15.0	19			
	8800	LEAR	47 GB	0641.5	0645.1	16.3	30			
	2695	ATHN	4 S/F	0641.8	0651.0	14.2D	24			
	2695	MANI	3 S	0642.6	0643.3	2.4	11.9	4.0		
	8800	MANI	3 S	0646.5	0649.0	3.5	52.2	17.7		
	8800	MANI	3 S	0733.3	0734.8	2.7	114.8	38.3		
	8800	LEAR	4 S/F	0733.3	0734.6	5.3	170			
	8800	LEAR	8 S	0849.3	0849.8	1.0	18			
	8800	LEAR	4 S/F	0904.6	0907.3	3.7	27			
	2800	OTTA	20 GRF	1420.0	1505	200.0	10.2	5.1		
	2800	OTTA	28 PRE	1815.0	1830	37.0	7.4			
	8800	SGMR	8 S	1838.6	1839.0	.5	24			
	8800	PALE	8 S	1838.8	1839.0	.2	33			
	2800	OTTA	47 GB	1852.0	1928	68.0	590.0	233.0		
	2695	SGMR	47 GB	1854.3	1858.6	17.3D	110			
	2695	PALE	47 GB	1854.6	1858.6	16.7	110			
	8800	SGMR	47 GB	1856.8	1858.6	14.8D	49			
	8800	PALE	47 GB	1857.6	1858.6	13.7	39			
	8800	PALE	47 GB	1908.3	1909.8	8.0	180			
	2695	PALE	47 GB	1908.3	1909.8	8.0	220			
	8800	SGMR	47 GB	1908.6	1910.0	6.5	160			
	2695	SGMR	47 GB	1908.6	1909.8	6.5	210			
	8800	SGMR	4 S/F	1918.1	1924.5	9.2	320			
	2695	SGMR	47 GB	1918.1	1924.3	9.2	500			
	8800	PALE	47 GB	1919.3	1919.5	13.5	270			
	2695	PALE	47 GB	1935.6	1943.0	26.2	540			
	8800	PALE	47 GB	1935.6	1943.0	26.2	310			
	8800	SGMR	4 S/F	1940.6	1941.3	30.9	170			
	2695	SGMR	4 S/F	1940.6	1940.8	30.9	290			
	2800	OTTA	30 PBI	2000.0	2000	170.0D	88.0			
	8800	PALE	4 S/F	2001.8	2002.0	12.5	26			
	2695	PALE	47 GB	2001.8	2002.1	12.5	72			
	2800	OTTA	3A S	2006.0	2022	55.0	93.0	42.0		
	2695	PENT	3 S	2011.0	2013.5	9.0	66.0	26.0		
	2695	PALE	4 S/F	2011.3	2013.3	10.5	100			
	2695	SGMR	4 S/F	2011.5	2013.3	12.6	119			
	2695	SGMR	4 S/F	2024.1	2024.5	11.7D	23			
	2695	PALE	4 S/F	2024.8	2026.1	16.2	70			
	2695	PALE	4 S/F	2041.0	2043.0	9.3	39			
10	8800	LEAR	4 S/F	0036.1	0038.3	3.7	21			
	8800	LEAR	8 S	0907.5	0908.1	1.3	26			
	8800	SGMR	8 S	1331.1	1331.1	1.0	13			
	8800	SGMR	4 S/F	1529.8	1531.5	9.0	130			
	2800	OTTA	20 GRF	1630.0	1635	50.0	5.6	3.0		
	8800	PALE	47 GB	1736.3	1737.1	5.2	51			
	2695	PALE	8 S	1736.5	1737.3	1.0	26			
	2800	OTTA	2 S/F	1745.0	1750	10.0	5.0	2.3		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

DECEMBER 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
10	2800	OTTA	20 GRF	1805.0	1813	85.0	12.4	6.0		
	8800	SGMR	8 S	1812.8	1813.1	.5	21			
	8800	PALE	4 S/F	2147.6	2148.8	3.5	76			
	2695	PENT	30 S	2148.0	2149	4.0	38.0	13.0		
	2695	PALE	4 S/F	2148.3	2148.8	2.3	48			
11	8800	LEAR	4 S/F	0106.3	0107.1	2.8	37			
	8800	LEAR	4 S/F	0225.1	0227.6	6.0	32			
	8800	LEAR	4 S/F	0303.8	0304.1	3.0	270			
	8800	MANI	3 S	0304.0	0304.8	1.4	214.2	71.4		
	8800	PALE	8 S	0304.1	0304.1	.4	170			
	8800	LEAR	4 S/F	0438.8	0440.0	8.3	139			
	8800	MANI	3 S	0439.0	0440.3	3.0	142.8	47.6		
	2695	LEAR	8 S	0728.8	0728.8	1.3	11			
	8800	LEAR	8 S	0729.0	0729.1	1.5	18			
	2695	LEAR	8 S	0742.3	0743.5	2.0	17			
	8800	LEAR	8 S	0742.5	0743.1	2.0	36			
	2800	OTTA	21 GRF	1600.0	1810	210.0	12.4	6.0		
	2800	OTTA	1 S	1805.0	1806	2.5	2.4	1.2		
	2800	OTTA	1 S	2014.8	2015.5	2.0	6.4	3.2		
12	8800	LEAR	47 GB	0319.8	0322.5	19.0	100			
	2695	LEAR	47 GB	0320.3	0322.6	16.5	23			
	8800	MANI	4 S/F	0322.0	0323.1	14.0	133.6	44.5		
	2695	MANI	4 S/F	0322.0	0328.8	14.5	50.2	16.7		
	8800	LEAR	8 S	0422.8	0423.0	.3	19			
	2695	LEAR	8 S	0422.8	0423.1	.5	16			
	8800	MANI	3 S	0423.0	0423.8	1.3	46.9	15.6		
	2695	MANI	3 S	0423.0	0423.7	1.2	28.7	9.5		
	2800	OTTA	27AFRF	1424.0		108.0	4.6	4.2		
	2800	OTTA	24 R	1424.0	1434	10.0	4.6	2.3		
	2800	OTTA	24P R	1434.0		81.0	4.6			
	2800	OTTA	2 S/F	1544.3	1544.9	1.2	3.4			
	2800	OTTA	26 FAL	1555.0	1612	17.0	-4.6	-2.3		
	2800	OTTA	21 GRF	1635.0	1705	110.0	21.4	14.6		
	2800	OTTA	4 S/F	1642.0	1646.5	11.0	93.0	30.0		
	8800	SGMR	4 S/F	1643.0	1646.5	9.3	99			
	2695	SGMR	47 GB	1643.5	1646.5	8.8	82			
	2800	OTTA	2 S/F	1654.0	1657.8	6.0	8.4	6.0		
	2800	OTTA	26A FAL	1830.0	1945	75.0	-11.6	-5.8		
	2800	OTTA	20 GRF	1835.0	1844	25.0	8.4	4.2		
13	2695	ATHN	4 S/F	1056.8	1057.3	5.20	28			
	2800	OTTA	20 GRF	1655.0	1730	70.0	3.6	1.8		
	2800	OTTA	21 GRF	1820.0	1910	110.0	7.6	3.4		
	2800	OTTA	1 S	1856.0	1857	2.0	5.0	2.5		
	2800	OTTA	3 S	1902.0	1902.8	3.5	22.0	7.4		
	2695	SGMR	8 S	1902.6	1903.1	1.0	29			
	2695	PENT	3 S	2126.5	2127.7	12.0	35.0	9.0		
	2695	PALE	4 S/F	2127.1	2127.6	13.0	44			
	8800	PALE	47 GB	2127.1	2128.1	13.0	70			
14	2800	OTTA	20 GRF	1425.0	1520	145.0	3.4	2.0		
	2695	PENT	1 S	2055.0	2056.2	3.0	4.2	1.4		
15	2800	OTTA	260 FAL	1500.0	1525	25.0	-3.2	-2.0		
	2800	OTTA	1 S	1540.0	1547	10.0	2.4	1.2		
	2800	OTTA	21 GRF	1615.0	1630	40.0	3.2	1.6		
	2800	OTTA	4 S/F	1626.2	1626.4	1.0	12.4			
	2800	OTTA	4 S/F	1944.0	1946.5	7.0	208.0	66.0		
	2695	PALE	4 S/F	1945.1	1946.6	4.0	180			
	8800	PALE	4 S/F	1945.3	1946.6	6.8	380			
	2695	SGMR	4 S/F	1945.5	1946.6	4.1	190			
	8800	SGMR	4 S/F	1945.8	1946.6	3.2	230			
	2800	OTTA	30 PBI	1951.0	1951	20.0	8.2	2.0		
	2800	OTTA	8 S	1954.0	1954.1	.2	9.4			
	8800	PALE	8 S	2332.8	2333.1	.5	24			
	8800	LEAR	8 S	2333.1	2333.1	.5	18			
16	2800	OTTA	20 GRF	1425.0	1455	65.0	2.8	1.4		
	2800	OTTA	20 GRF	1615.0	1730	210.0	5.2	3.0		
18	2800	OTTA	21 GRF	1440.0	1630	200.0	3.0	1.5		
	2800	OTTA	1 S	1541.8	1542.2	1.2	4.0	2.0		
21	2800	OTTA	240 R	1620.0	1635	15.0	2.0	1.0		
22	2800	OTTA	20 GRF	1340.0	1400	20.00	5.0			
23	2800	OTTA	240 R	1605.0	1615	10.0	3.0	1.5		
	2800	OTTA	21 GRF	1750.0	1753	30.0	2.6	1.6		
	2800	OTTA	1 S	1756.0	1757	4.0	4.2	1.4		
24	2800	OTTA	20 GRF	1625.0	1720	95.0	3.0	2.2		
	2800	OTTA	240AR	1825.0	1905	40.0	4.6	2.5		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

DECEMBER 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
24	2800	OTTA	4 S/F	1826.9	1827	1.0	19.0	7.0		
	2800	OTTA	2 S/F	1840.0	1841	1.5	3.6			
	2800	OTTA	1 S	1851.5	1853	3.5	9.4	4.7		
	2695	PENT	1 S	2039.0	2039.3	1.0	2.4			
	2695	PENT	1 S	2055.0	2055.5	2.0	2.0	1.0		
	2695	PENT	1 S	2058.0	2100.5	5.0	5.4	2.0		
25	2800	OTTA	20 GRF	1715.0		80.0	3.0	2.3		
26	2800	OTTA	240 R	1520.0	1645	85.0	5.2	2.6		
	2800	OTTA	20 GRF	1720.0	1810	80.0	3.6	1.6		
	2695	PENT	1 S	2208.2	2209.2	1.5	4.4	1.5		
27	2695	LEAR	4 S/F	0201.8	0203.1	3.0	05			
	2695	LEAR	8 S	0256.0	0256.6	.1	11			
28	8800	LEAR	8 S	1025.0	1025.1	.8	41			
	2695	LEAR	8 S	1025.0	1025.1	.8	29			
	2800	OTTA	240 R	1715.0	1735	20.0	3.0	2.0		
	2800	OTTA	3 S	1800.0	1801.2	5.0	10.2	6.8		
	2800	OTTA	30 PBI	1805.0	1805	65.0	5.6	3.0		
	2800	OTTA	1 S	1827.0	1828	2.0	5.4	2.7		
	2695	PENT	1 S	2021.5	2022.5	2.5	3.8			
29	2695	PENT	1 S	2047.0	2049	6.0	4.6	1.6		
30	2695	MANI	4 S/F	0324.8	0325.0	6.2	20.9	7.0		
	2800	OTTA	21 GRF	2043.0	2055	23.0	4.6	1.6		
	2800	OTTA	8 S	2047.9	2048	.8	11.2	3.8		
	2695	PENT	3 S	2229.0	2230	2.0	11.2	5.0		
31	2800	OTTA	21 GRF	1920.0	1921	11.0	7.6			
	2800	OTTA	3 S	1922.0	1923	3.0	15.2			

Observatories:

BERN = Berne MANI = Manila OTTA = Ottawa ARO PENT = Penticton SGMR = Sagamore Hill
LEAR = Learmonth ATHN = Athens PALE = Palehua

Explanation of Type Code:

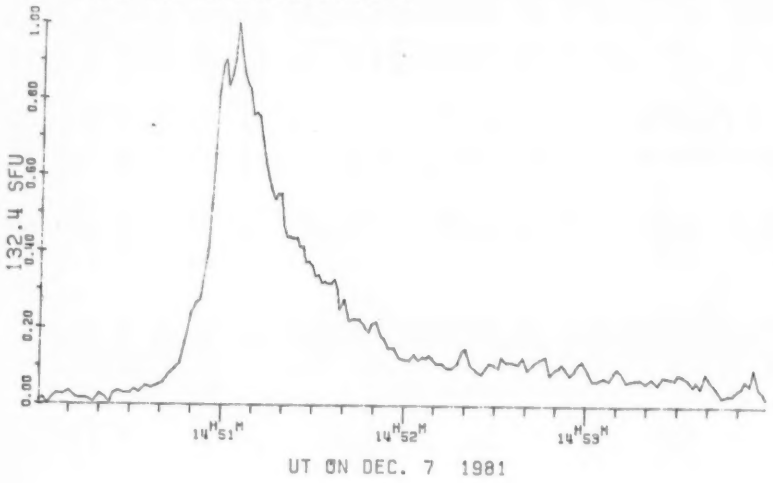
1 Simple 1	6 Minor	22 Simple 3F	27 Rise and Fall	32 Absorption	44 Noise Storm in Progress
2 Simple 1F	/ Minor +	23 Simple 3AF	28 Precursor	40 Fluctuation	45 Complex
3 Simple 2	8 Spike	24 Rise	29 Post Burst Increase	41 Group of Bursts	46 Complex F
4 Simple 2F	20 Simple 3	25 Rise A	30 Post Burst Increase A	42 Series of Bursts	47 Great Burst
5 Simple	21 Simple 3A	26 Fall	31 Post Burst Decrease	43 Onset of Noise Storm	48 Major
					49 Major +

SELECTED SOLAR NOISE BURSTS

DECEMBER 7-9, 1981

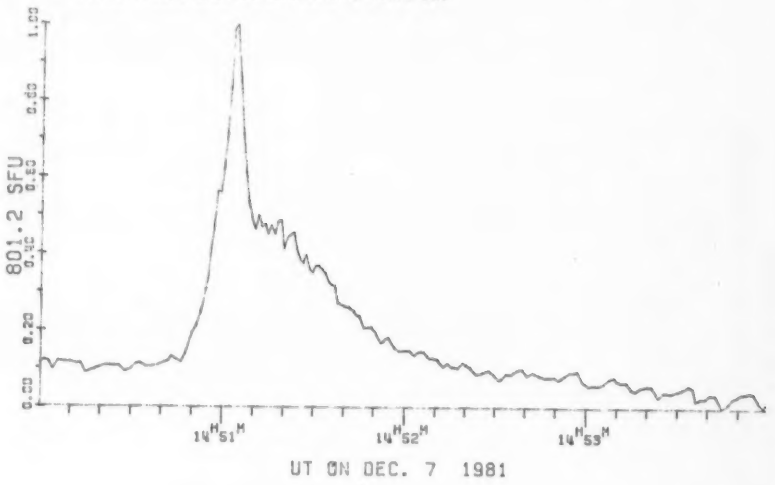
INSTITUTE OF APPLIED PHYSICS, UNIVERSITY OF BERNE, SWITZERLAND

I 8.4, F=8.4 GHZ, BW=6.0 MHZ, T=1.0 SEC



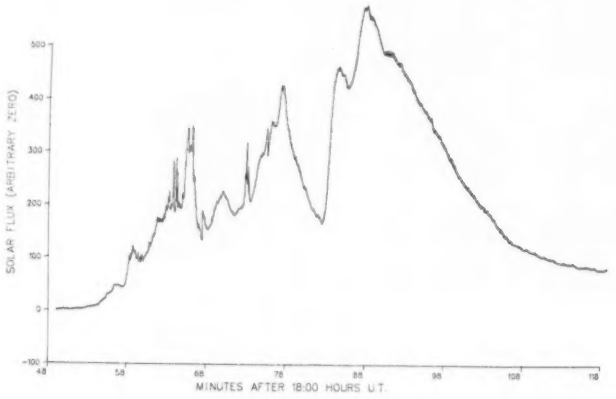
INSTITUTE OF APPLIED PHYSICS, UNIVERSITY OF BERNE, SWITZERLAND

I35.0, F=35.0 GHZ, BW=1000.0 MHZ, T=1.0 SEC



DECEMBER 09, 1981

SELECTED 2800 MHz SOLAR NOISE BURST
A.R.O. OTTAWA, ONT.
CANADA



PIONEER XII

DECEMBER 1981

DATE Dec '81	TIME (UT)	ESV (°)	U_{H+} (km/s)	N_{H+} (H^+/cc)	T_{H+} (x10^6 K)
1	0531	031.	348.	16.3	0.084
2	0726		370.	37.9	.078
3	0222		377.	39.5	.051
4	0657		283.	25.	.031
5	0720		264.	46.2	.023
6	0725		251.	42.9	.037
7	0629		306.	82.	.047
8	0737		387.	29.9	.094
9	0556		343.	25.8	.083
10	0629		435.	26.2	.077
11	0445		356.	27.5	.046
12	0642		425.	64.6	.156
13	0832		397.	34.2	.197
14	0403		393.	27.5	.032
15	0655	022.	397.	13.8	.168
16	0613		437.	13.1	.057
17	0500		321.	23.	.086
18	0624		300.	21.8	.053
19	0643		353.	64.3	.036
20	1018		370.	20.3	.08
21	0542		356.	28.3	.107
22	0634		412.	19.3	.156
23	0609		390.	33.	.092
24	1526		364.	23.6	.058
25	0710		359.	16.5	.067
26	0616		383.	19.4	.084
27	0709		444.	19.4	.16
28	0410		473.	13.8	.085
29	0505		488.	34.	.16
30	0506		590.	27.2	.112
31	0447		543.	2.1	.101

INFERRED IP MAGNETIC FIELD

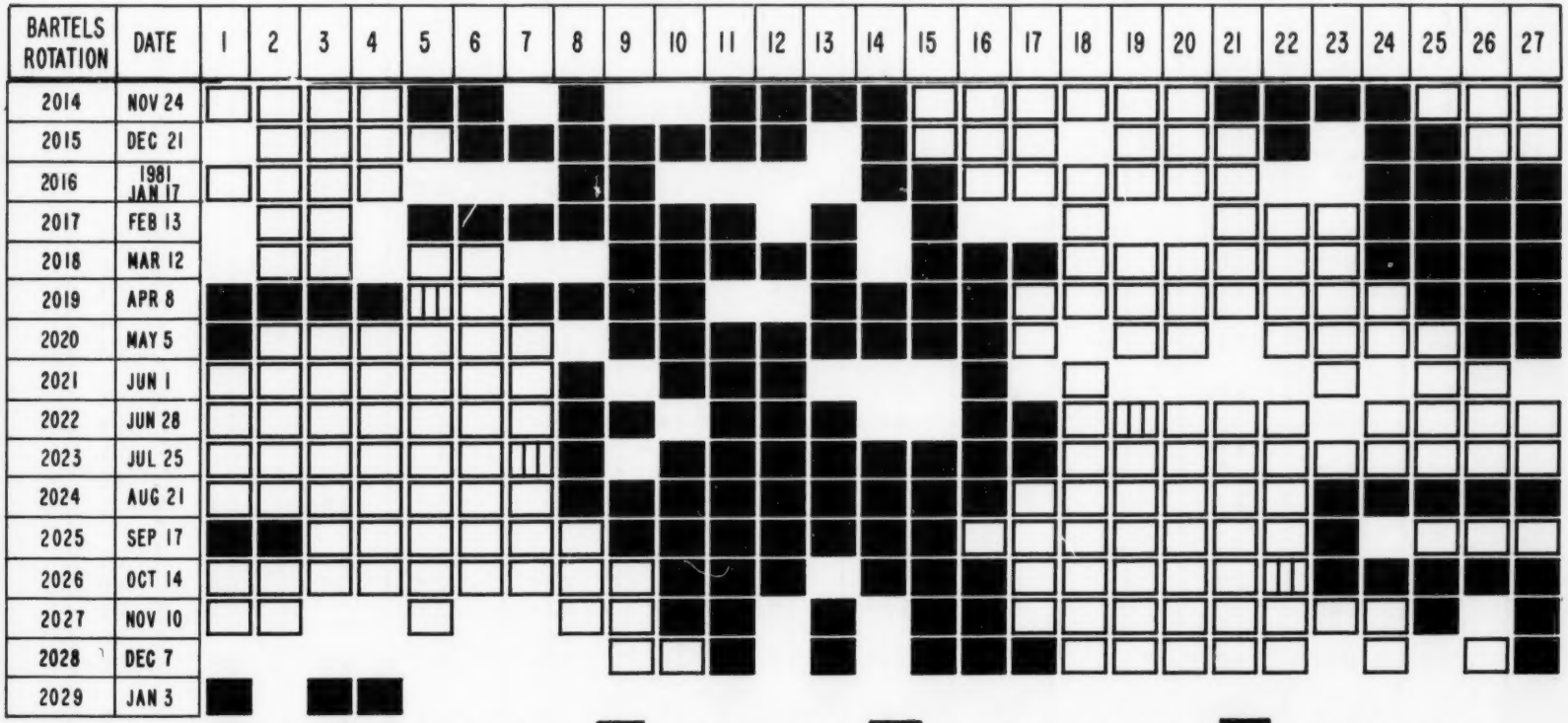
BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
2008	JUN 20							AT															TA			TA		TA	
2009	JUL 17			AT											TA	TA		AT	AT										
2010	AUG 13		AT						AT									AT						TA			A*		
2011	SEP 9							TA	AT						TA	TA										TA		
2012	OCT 6							*		TA	TA		AT	A*	A*							TA			TA			
2013	NOV 2	AT					TA	TA				AT	A*									TA	AT			TA		
2014	NOV 29														TA		TA	TA	AT			AT					TA	
2015	DEC 26															TA	TA							AT	AT			
2016	1981 JAN 22	TA			AT	T*				AT	TA				TA									AT			TA	
2017	FEB 18			AT	TA									TA	TA		*							AT		TA	TA	
2018	MAR 17							AT											TA				AT				TA	AT
2019	APR 13	TA													TA				*	AT								
2020	MAY 10				TA	AT	TA			TA			TA									*	*					
2021	JUN 6		*								AT				TA			AT										
2022	JUL 3																											
2023	JUL 30																		TA	TA						AT		
2024	AUG 26				TA	TA		TA			TA					TA		TA					TA					
2025	SEP 22								AT	TA				TA		TA	TA	TA		AT		TA	AT	TA	AT	TA	TA	TA
2026	OCT 19	AT	TA	TA					TA	TA		TA					TA						AT	TA				
2027	NOV 15				AT	AT					AT						TA		TA	TA	AT						AT	
2028	DEC 12	TA				AT	AT			AT	TA							AT		AT	TA							

= definitely towards the sun = definitely away from the sun

T = towards the sun A = away from the sun * = effect doubtful or not discernible - = missing data

The table shows daily inferences of the polarity of the interplanetary magnetic field. The first half of the day is based principally on magnetograms produced by the magnetometer at the Vostok Antarctic Station of the USSR. The magnetometer of the U.S. Air Weather Service now operated at Thule by the Danish Meteorological Institute is used for the second half of the day. The Thule magnetometer ceased operating in August 1981.

STANFORD MEAN SOLAR MAGNETIC FIELD



POLARITY OF THE MEAN SOLAR MAGNETIC FIELD: □ = FIELD >2μT, ▥ = -2μT ≤FIELD ≤2μT, ■ = FIELD <-2μT

No box visible indicates no data available for that day.

NOTE: Data are taken daily at 2000 UT. Dates given are not Bartels Rotation dates. These earlier dates correspond to the occurrence of phenomena on the Sun that affect the Earth during the given Bartels Rotation.

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

1981

DAY	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
01	-111	33	.	75	2	16	53	-49	-134	-27	94	41
02	.	20	54	82	-51	21	49	.	-87	11	82	34
03	-33	64	.	31	-66	17	41	-72	-56	70	55	49
04	7	72	.	-23	-56	6	14	-80	-21	104	-1	-3
05	46	58	102	-67	-24	28	-17	-67	-7	115	-19	.
06	66	28	81	-85	23	33	-62	-48	11	104	-36	-12
07	.	.	39	-97	25	3	.	-33	26	28	-29	.
08	116	.	-11	-76	36	-27	-93	-26	30	25	-23	.
09	49	-6	-28	-40	45	.	-56	-19	33	-7	-16	.
10	13	-24	-50	-28	49	-96	-43	-7	32	.	11	.
11	-29	-42	-58	-7	35	-75	.	16	4	8	34	.
12	.	-26	.	0	.	-58	.	58	-29	32	.	.
13	-39	.	18	13	-76	.	-9	68	-47	43	.	.
14	-13	15	35	-6	-147	.	-7	81	-37	64	105	.
15	8	24	.	-29	-131	.	9	68	-24	103	.	57
16	18	.	37	-61	-94	-3	0	49	-32	115	.	17
17	62	-8	12	-73	-50	.	38	49	-24	167	48	-5
18	67	-19	.	.	-47	50	59	42	-8	218	3	.
19	67	-62	.	.	-53	.	66	16	11	193	-28	-37
20	37	-65	-41	-85	-41	.	.	12	85	115	-45	.
21	.	-76	-91	-79	13	.	108	31	135	65	.	-39
22	.	-70	-119	-86	.	.	107	38	124	9	-65	-11
23	.	-68	-120	-51	72	59	73	52	60	-62	.	-2
24	-52	.	-102	5	61	.	34	67	6	-107	-43	35
25	-87	-75	.	43	.	29	29	92	-79	-128	-20	4
26	.	.	-88	70	126	18	34	64	-115	.	58	39
27	.	-8	-52	67	109	.	28	15	-138	-61	83	17
28	.	.	-20	84	50	44	33	-12	-144	-60	96	29
29	.		31	122	24	62	43	-64	-121	-19	59	.
30	-59		45	61	-9	50	38	-84	-75	67	55	24
31	-4		55		-4		1	-143		87		.

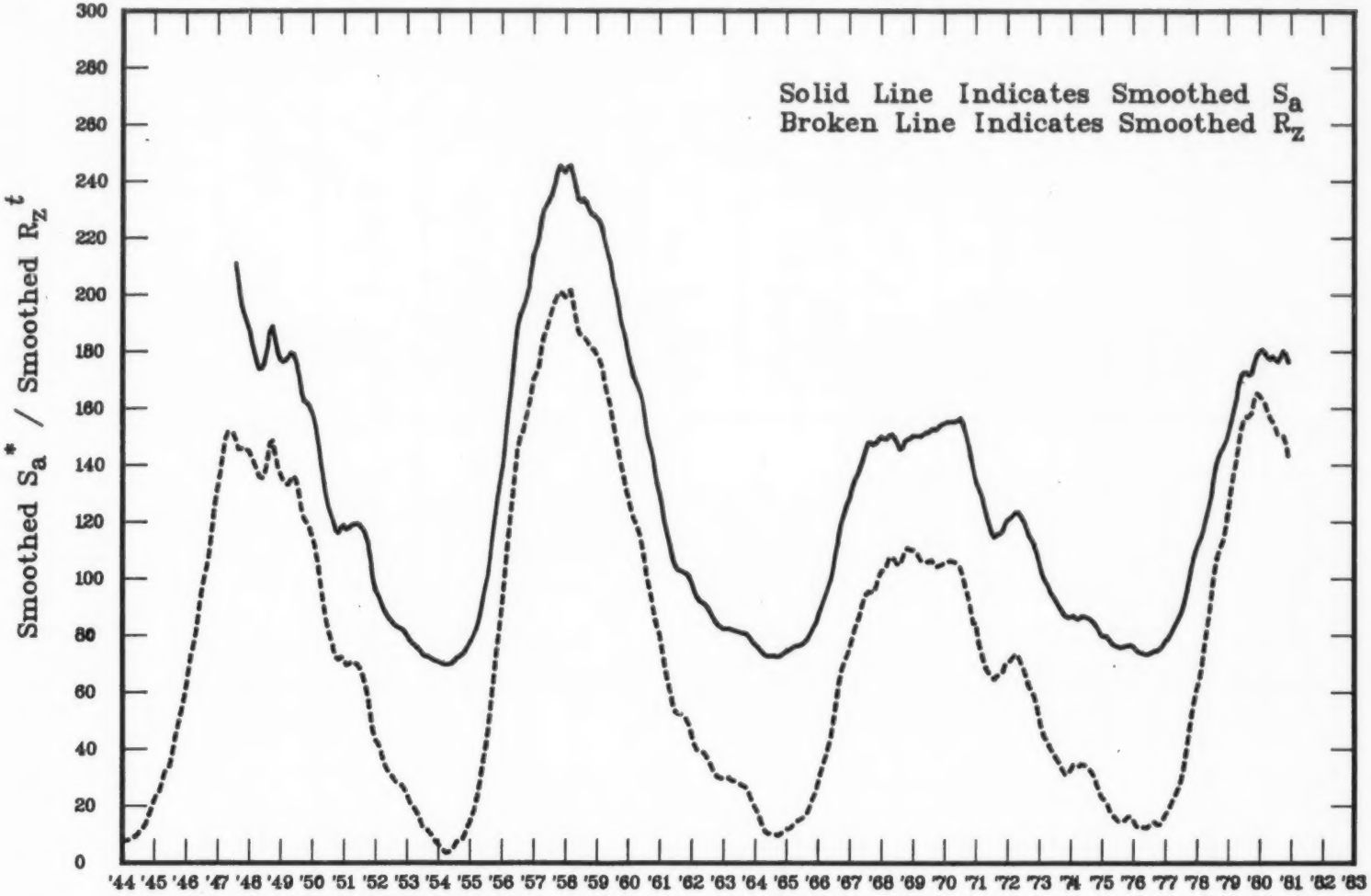
DOT SYMBOL ENTRY INDICATES NO DATA AVAILABLE FOR THE DAY.

BOULDER GEOMAGNETIC SUBSTORM LOG

DECEMBER 1981

DATE	ONSET TIME	DIR	COMMENTS
12/01			Field unsettled 1000-1700 UT.
	1040		Weak SS
	1500		Weak SS
12/02	1035	West	Field quiet balance of day.
12/03			Field slightly unsettled.
12/04			Field intermittently unsettled.
	0920		Weak SS
	1140		Weak SS
12/05			Field slightly unsettled.
	0840		Weak SS
12/06			Field slightly unsettled.
	0655		Weak SS
12/07			Field slightly unsettled.
12/08			Field intermittently unsettled.
	0550		Weak SS
	1100		Weak SS
	1455	West	Several injections.
12/09	0500	East	Weak SS
	0940	≈ center	SS most intense Ft. Simpson to Lynn Lake.
	1250		Slow onset with recovery near 1500 UT.
12/10	0425	East	Weak SS
	0935	West	
12/11			Field slightly unsettled.
12/12	0144	SSC	
	0725		Weak SS
	1145	West	Strong SS; slow onset, several injections with recovery near 1430 UT.
12/13			Field unsettled through 1700 UT.
	0800		Weak SS
	1010		Localized SS, Cape Parry to Sachs Harbour.
	1420		Localized SS at College.
12/14	0930		Weak SS
	1005		Weak SS College to Ft. Yukon.
12/15	0900		Weak SS
	2045		Weak SS
12/16	0850		Weak SS
12/17			Field slightly unsettled.
12/18	0825	West	Moderate SS
	1025	West	
	1245		Localized SS vicinity College.
12/19	1105	West	Moderate SS
12/20	0840		Weak SS
12/21			Field intermittently unsettled.
	0705		Weak SS vicinity Inuvik.
12/22			Field slightly unsettled.
12/23			Field slightly unsettled.
12/24			Field intermittently unsettled with no significant SS activity.
12/25	1120		Weak SS
	1540		Weak SS
12/26	1005		Weak SS
	1030		Localized SS; Ft. Simpson to Norman Wells to Inuvik.
12/27			Field intermittently unsettled.
	1210		Weak SS
12/28	0640		Weak SS
	1350	West	
12/29	1255		Positive impulse H-component all mid/low latitude stations. Mag-storm conditions through 1830 UT.
12/30	0245	East	
	0540		Localized SS vicinity College.
	0955	West	
	1305	West	
	1515	West	
12/31	0805	West	Moderate SS. Sharp onset at Lynn Lake with westward expansion.

Superposition of Zürich Sunspot Numbers and Ottawa 10.7 cm Flux
January 1944 – December 1980



* Solar Flux Units (10^{-22} W/m^2 Hz) Adjusted to 1 A.U., Series D.

t Reduced Zürich Sunspot Numbers.

NOVEMBER 1981 DATA

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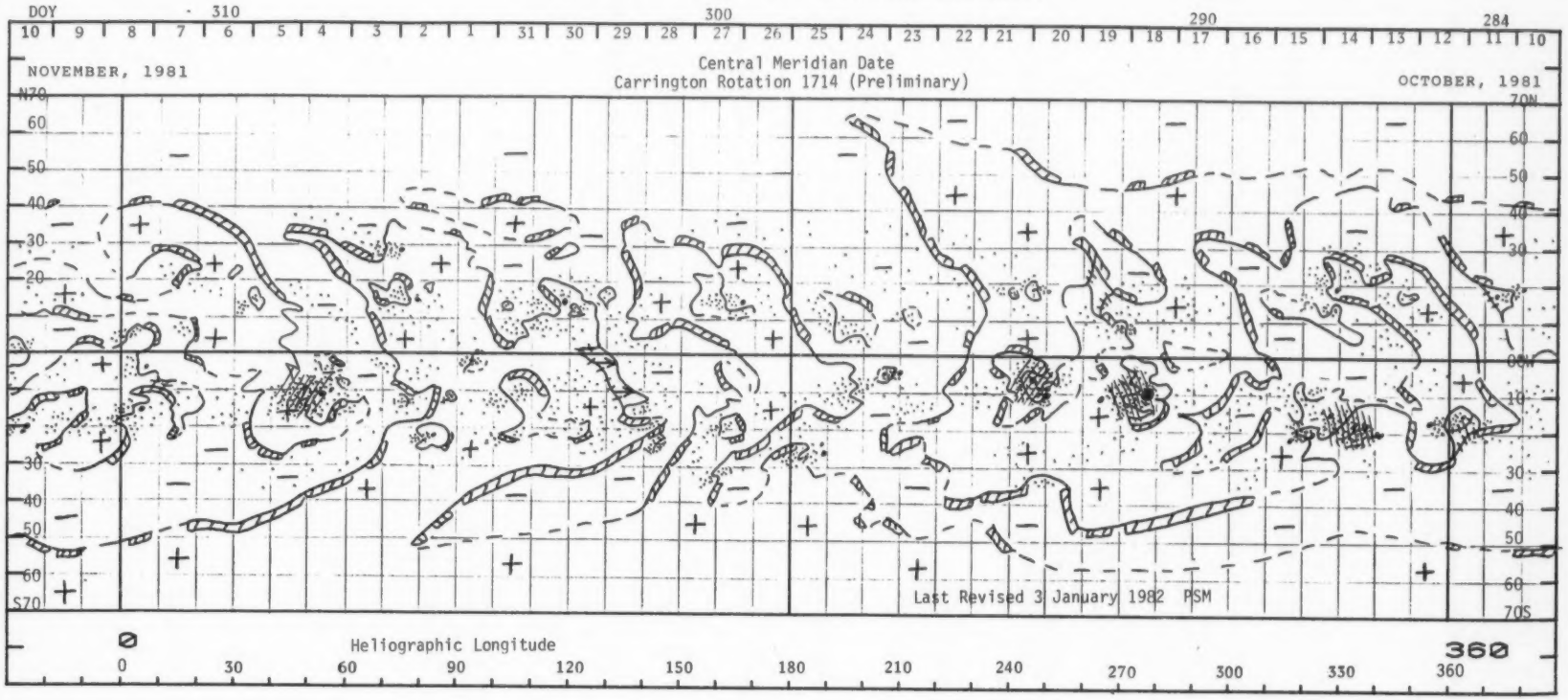
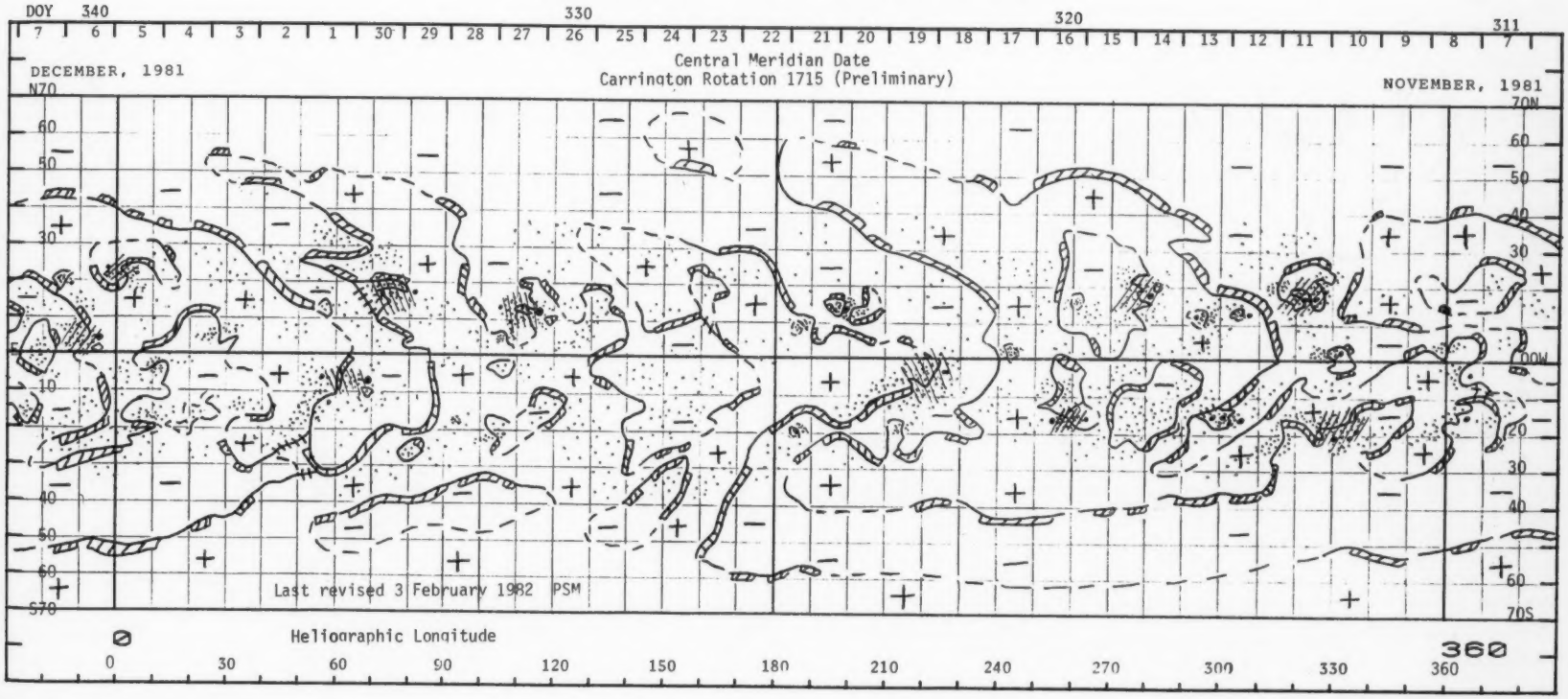
Hα SYNOPTIC CHART

CARRINGTON ROTATION 1714 (PRELIMINARY)



Hα SYNOPTIC CHART

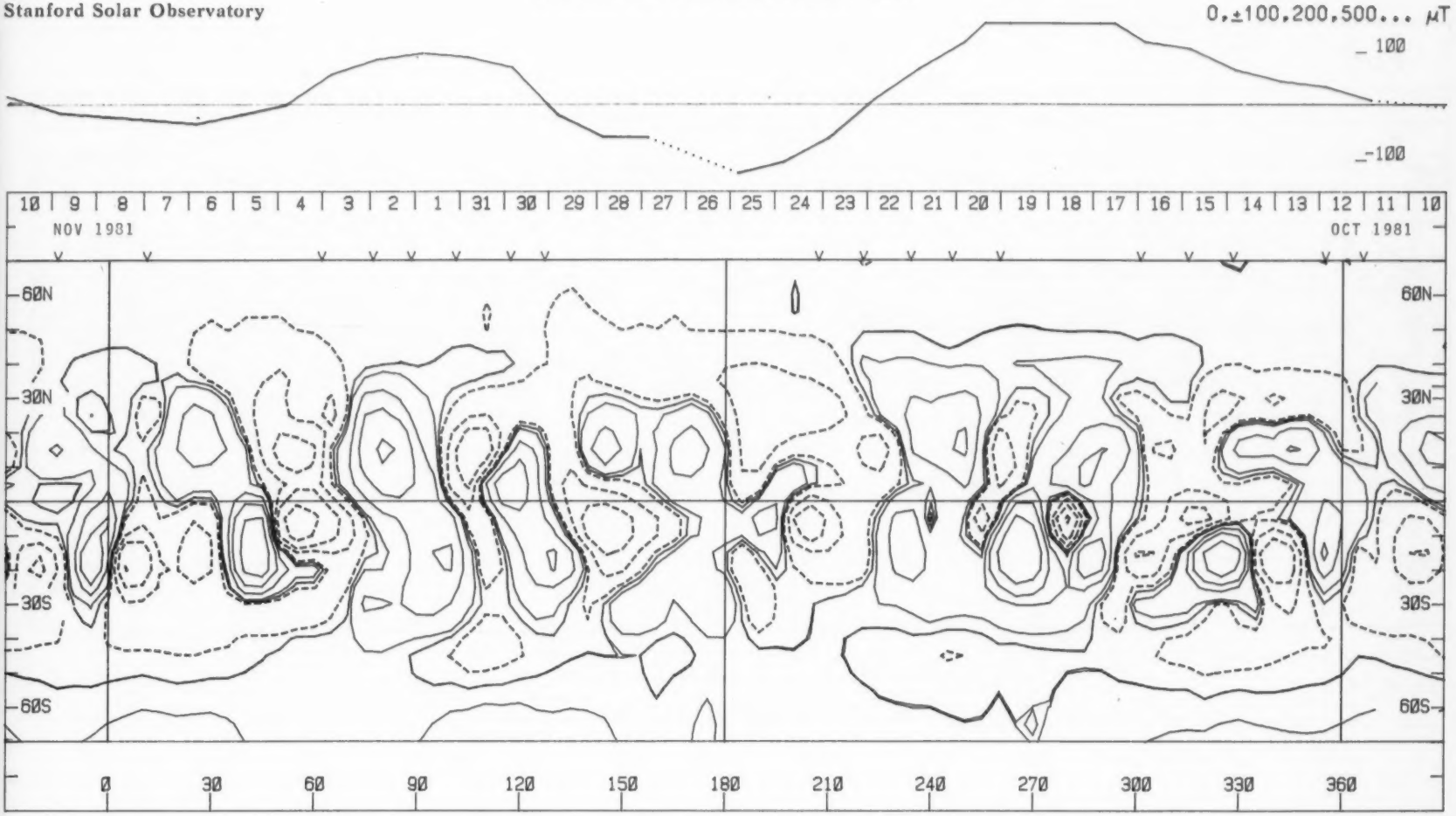
CARRINGTON ROTATION 1715 (PRELIMINARY)



SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION 1714

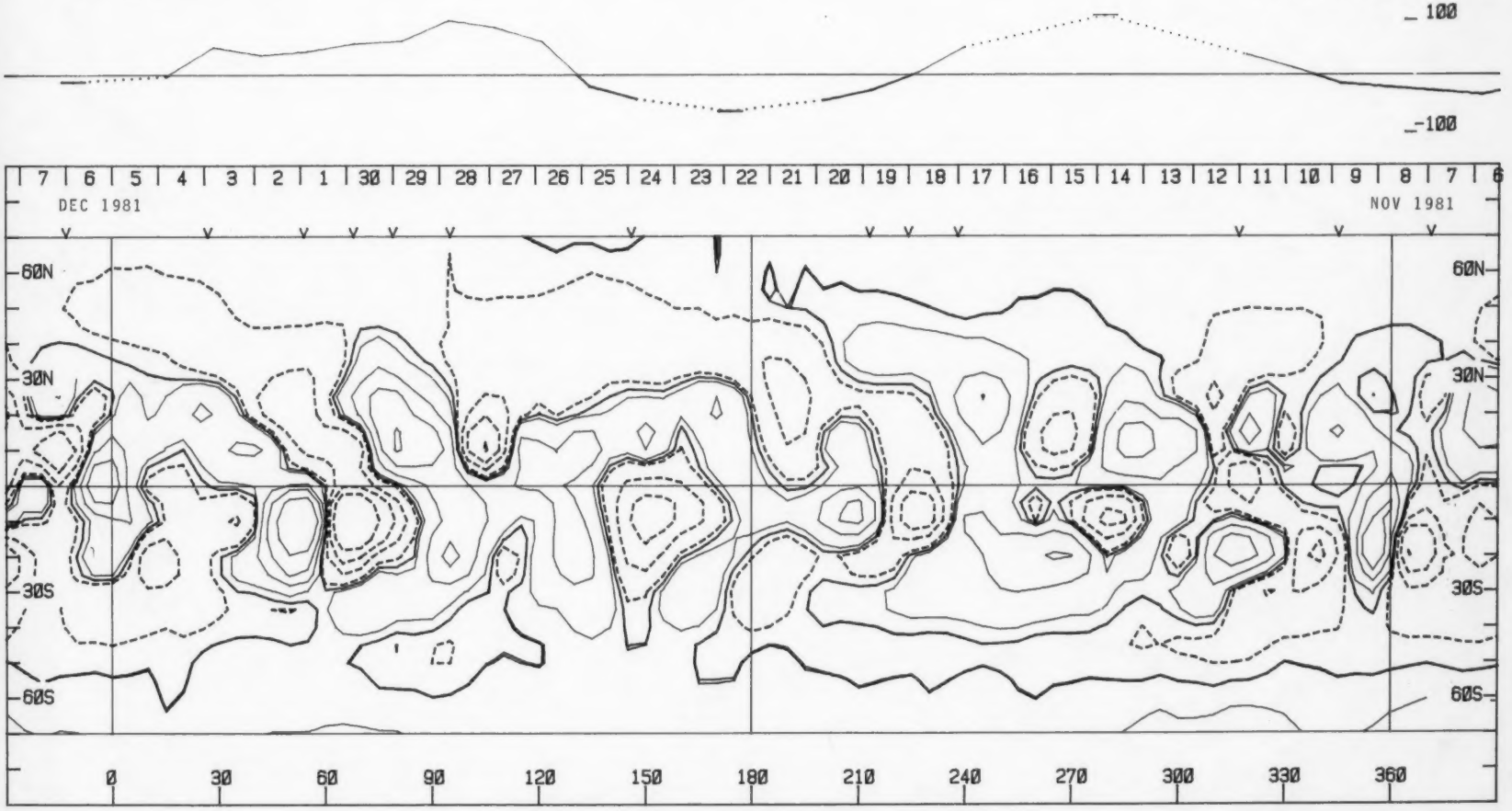
Stanford Solar Observatory



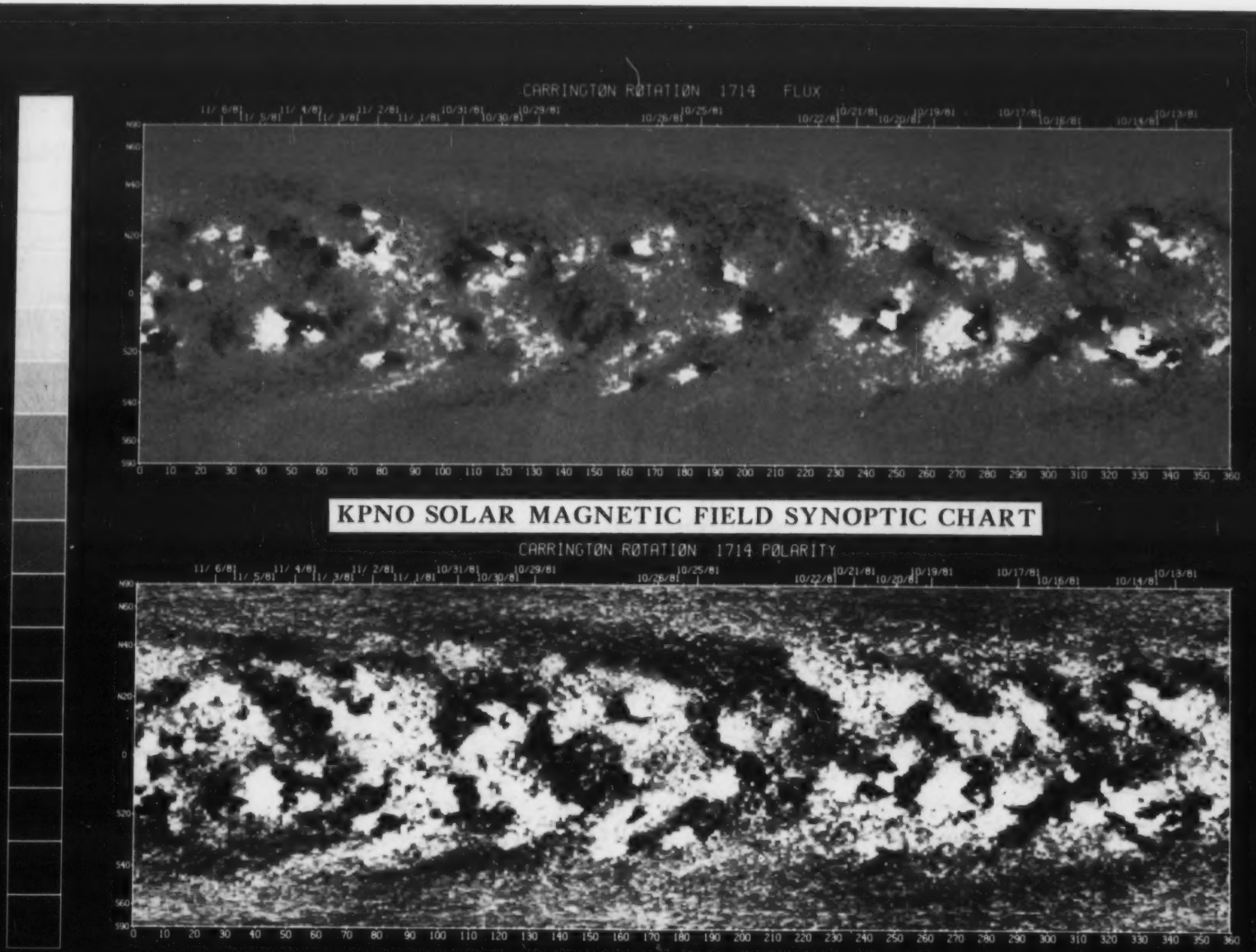
SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTON ROTATION 1715

Stanford Solar Observatory

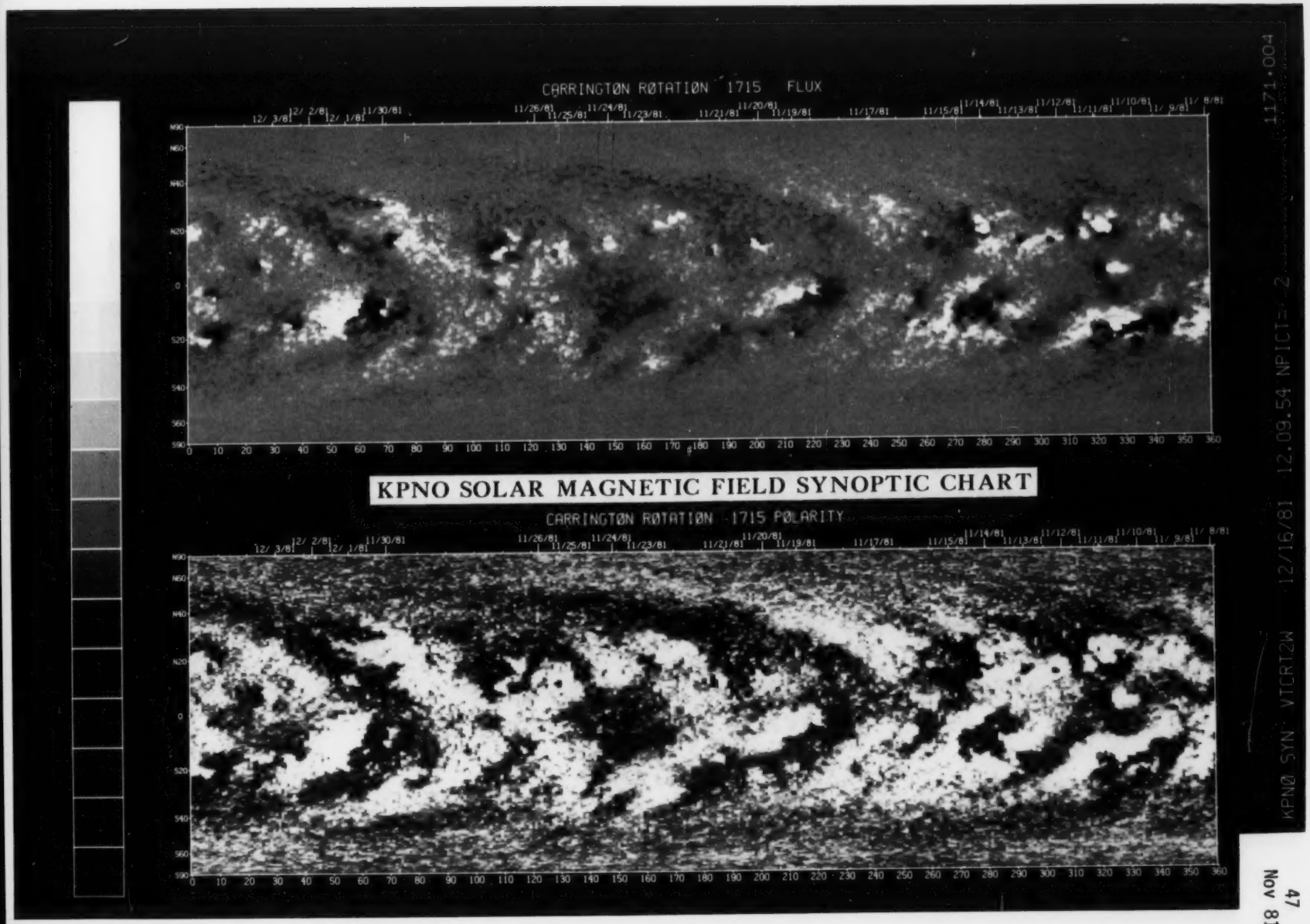
0.±100.200.500... μT



45
Nov 81

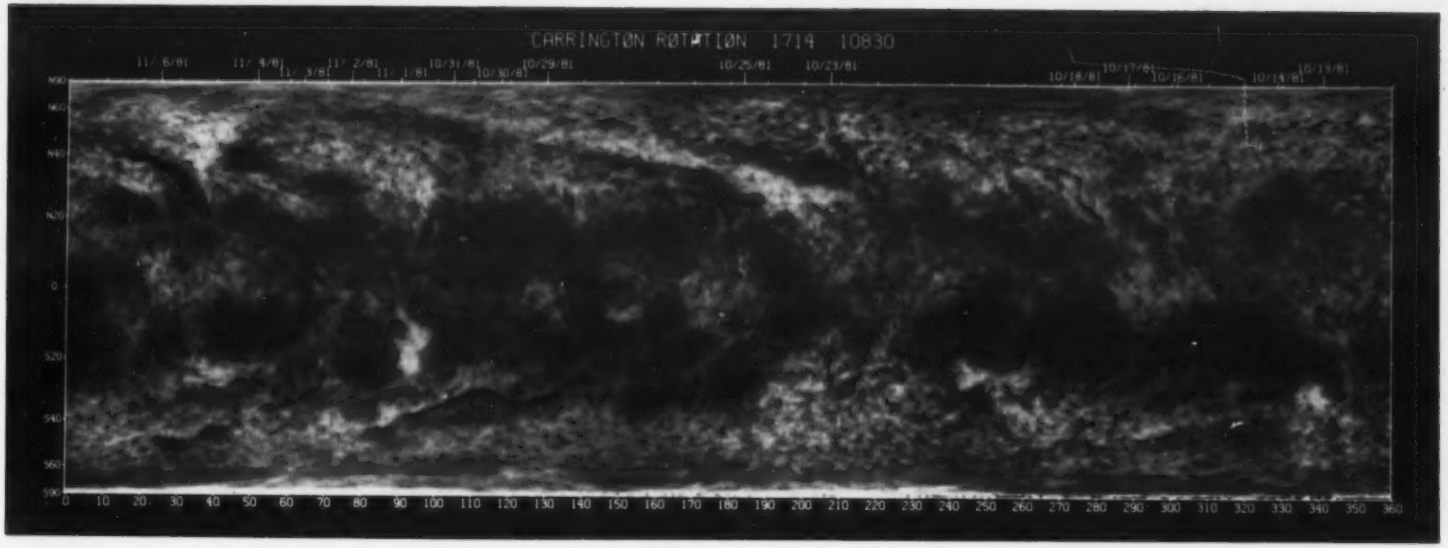


KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART


CARRINGTØN RØTATIØN 1715 FLUX
CARRINGTØN RØTATIØN 1715 PØLARITY
KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART
KPNØ SYN: VICRT2W 12/16/81 12.09.54 NPICT= 2 1171.004
47
Nov 81

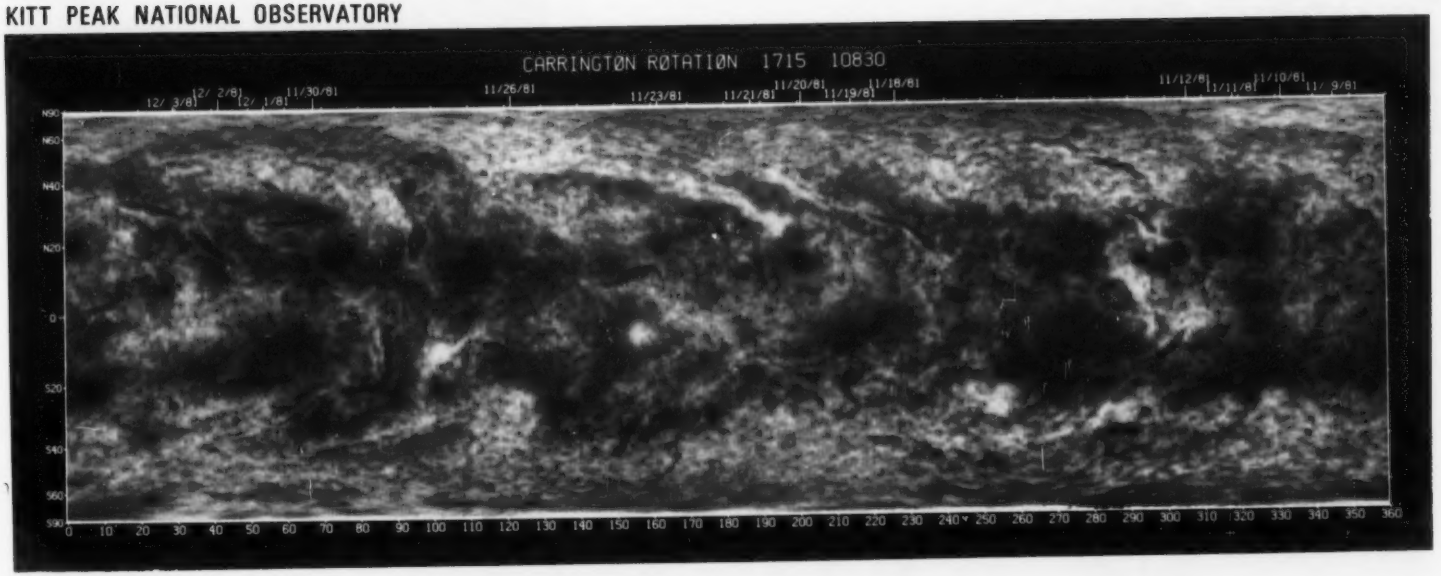
HELIUM 10830Å SYNOPTIC MAPS
CARRINGTON ROTATION 1714

KITT PEAK NATIONAL OBSERVATORY



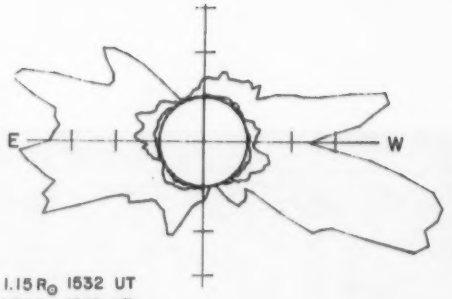
HELIUM 10830Å SYNOPTIC MAPS
CARRINGTON ROTATION 1715

KITT PEAK NATIONAL OBSERVATORY



NOVEMBER 1, 1981 (P= 24.55, B_o= 4.36, L_o=100.78)

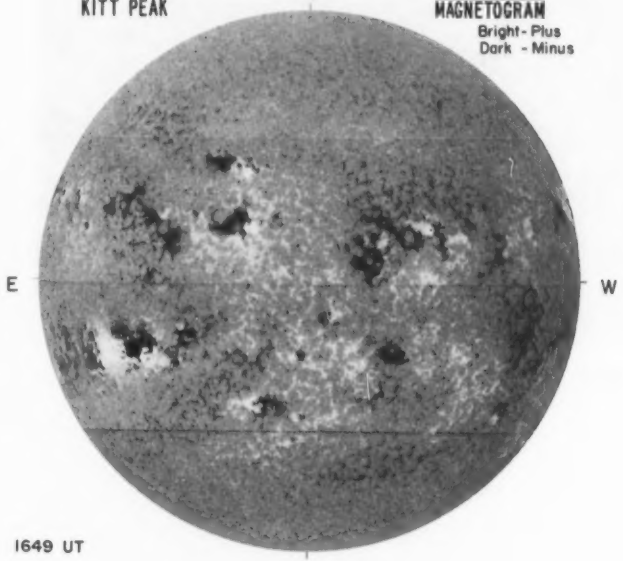
SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 1532 UT
1.35 $R_\odot$ 1510 UT
1.55 $R_\odot$ 1519 UT

Sp

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark - Minus

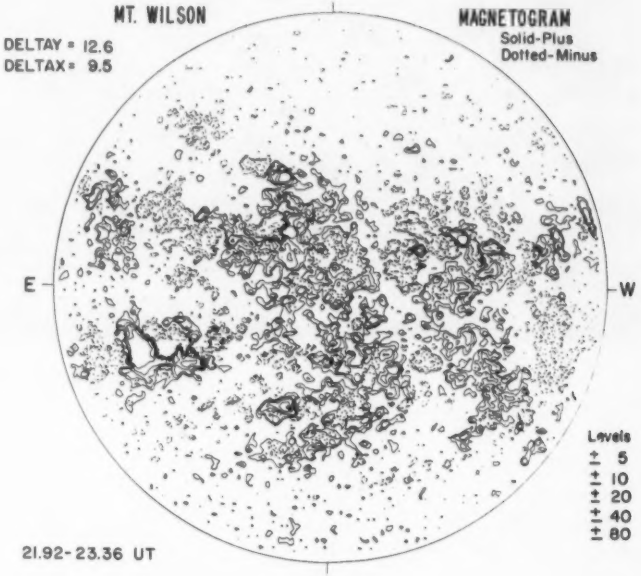


1649 UT

Sp

MT. WILSON Np MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.5



21.92-23.36 UT

Sp

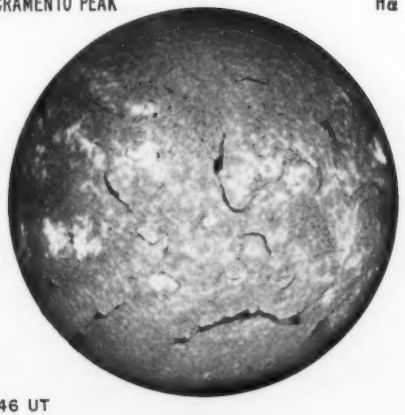
01

Np Np Np

ACTIVE REGIONS

01

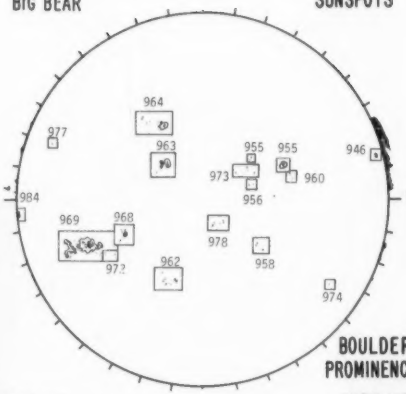
SACRAMENTO PEAK Np Hα



E W

1546 UT Sp

BIG BEAR Np SUNSPOTS

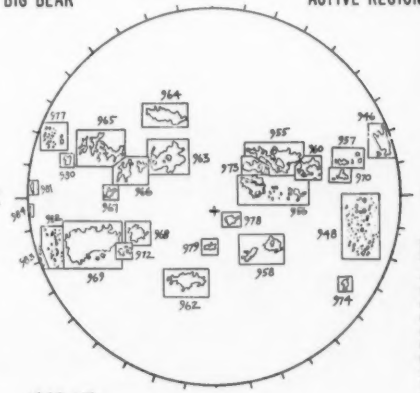


E W

1705 UT Sp

BOULDER PROMINENCES 1620 UT

BIG BEAR Np ACTIVE REGIONS



E W

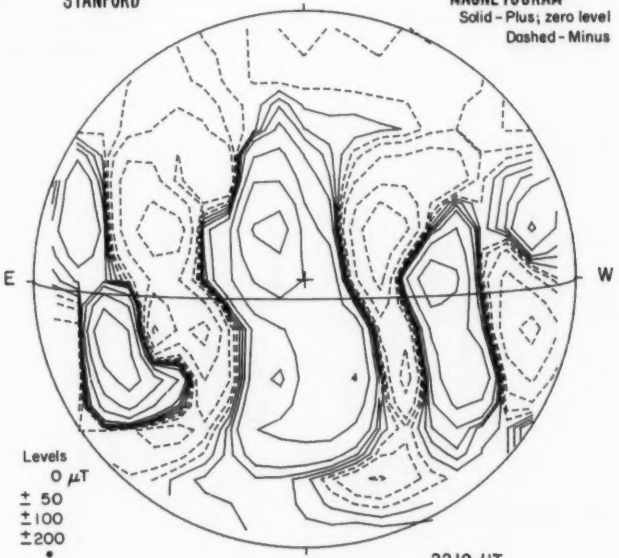
1649 UT Sp

GOOD	WM
46- 2000-3.5	
55- 2500-2.5	
60- 0700-2.5	
62- 1500-2.5	
63- 2600-3.0	
64- 1600-2.5	
69- 7000-4.0	
72- 0300-2.5	
77- 0700-3.0	
78- 0300-3.5	
81- 0300-3.0	
83- 0500-3.0	

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

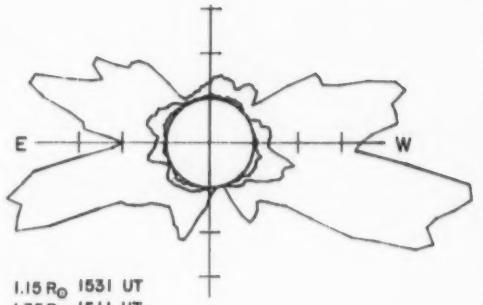
±200

• • •

Sp 2219 UT

NOVEMBER 2, 1981 (P= 24.38, B_o = 4.26, L_o = 87.59)

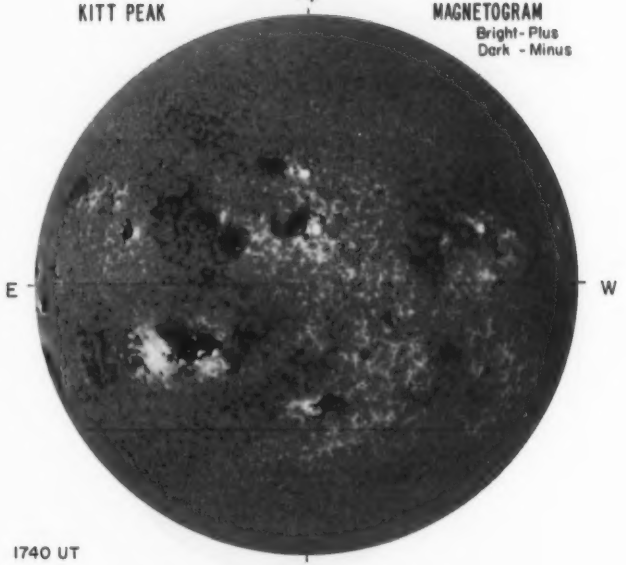
SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 1531 UT
1.35 $R_\odot$ 1511 UT
1.55 $R_\odot$ 1520 UT

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

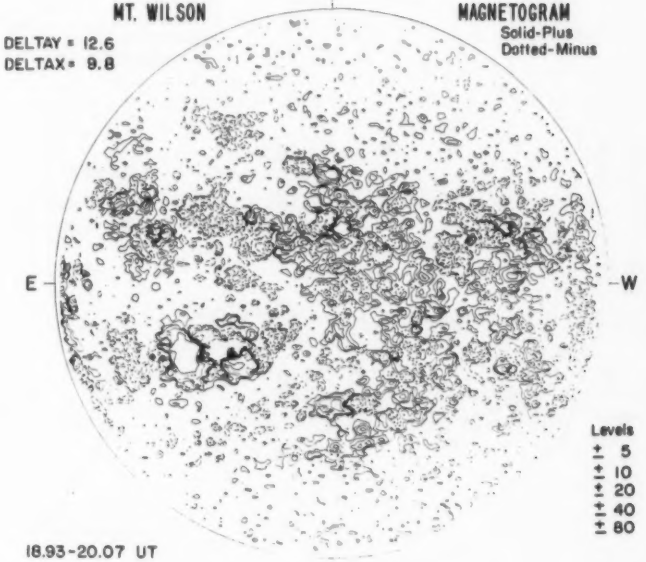


1740 UT

Sp

MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX = 9.8



18.93-20.07 UT

Sp

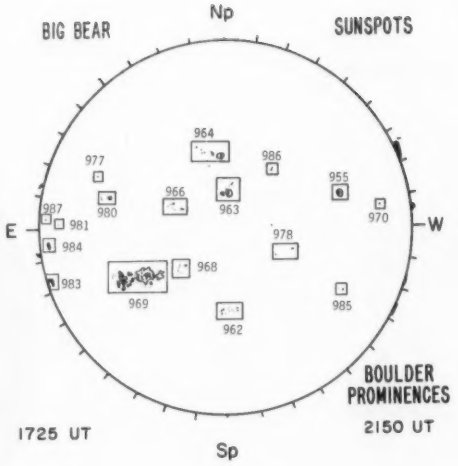
02

02

SACRAMENTO PEAK

1612 UT

BIG BEAR SUNSPOTS

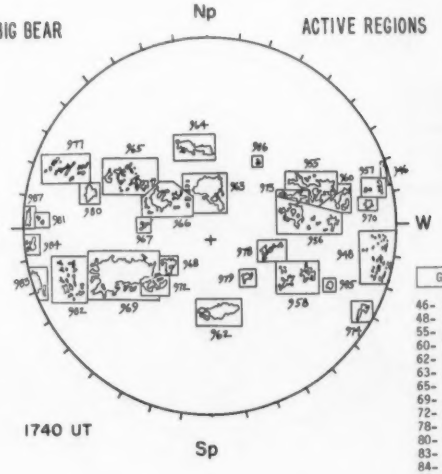


1725 UT

BOULDER PROMINENCES

2150 UT

BIG BEAR ACTIVE REGIONS



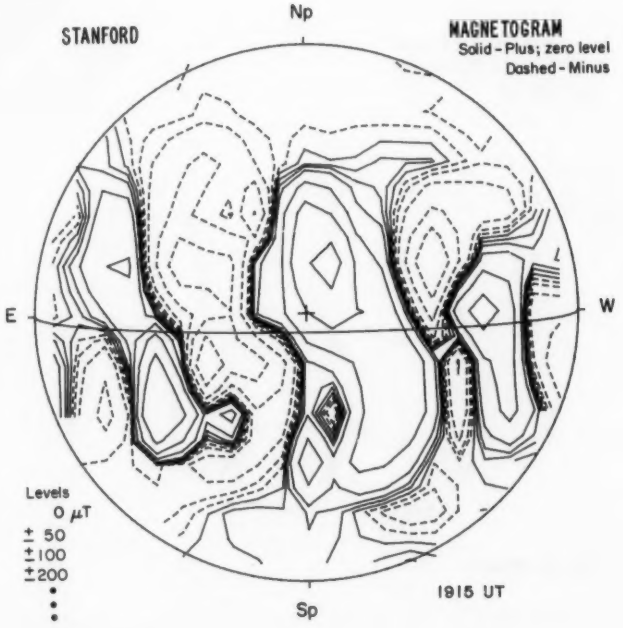
1740 UT

	GOOD	WM
46-	0700	3.5
48-	2000	2.5
55-	2500	3.0
60-	0900	2.5
62-	1500	3.0
63-	2700	3.0
65-	1700	2.5
69-	7300	4.0
72-	0300	2.5
78-	0300	2.5
80-	0700	3.5
83-	3500	3.5
84-	0800	3.5
87-	0900	3.0

STANFORD MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



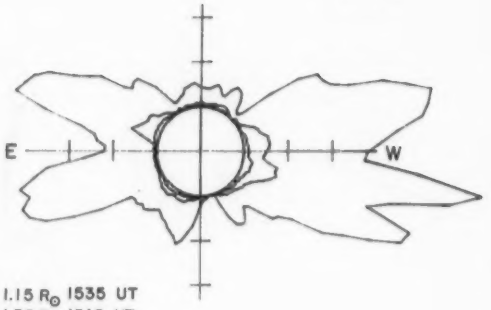
1915 UT

NOVEMBER 3, 1981 (P= 24.20, B_o = 4.15, L_o = 74.41)

SACRAMENTO PEAK

Np

CORONA
5303 Å



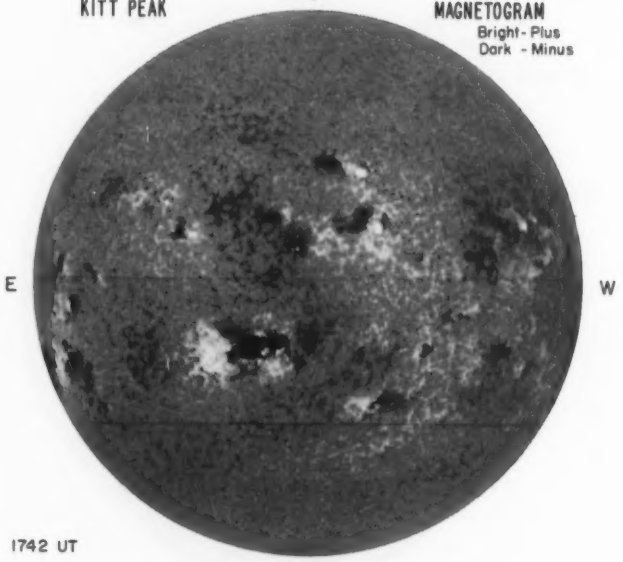
1.15 $R_\odot$ 1535 UT
1.35 $R_\odot$ 1515 UT
1.55 $R_\odot$ 1524 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



1742 UT

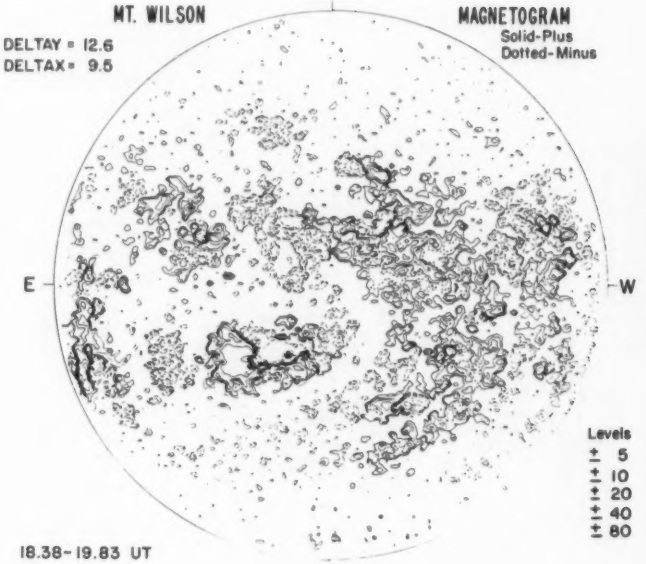
Sp

MT. WILSON

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX = 9.5

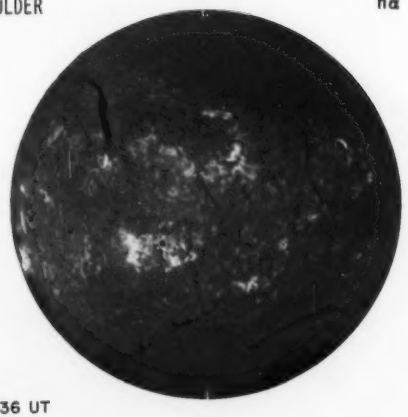


18.38-19.83 UT

Sp

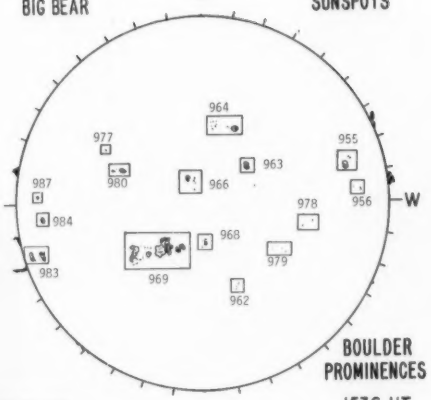
03

BOULDER Np Hα



1536 UT

BIG BEAR Np SUNSPOTS

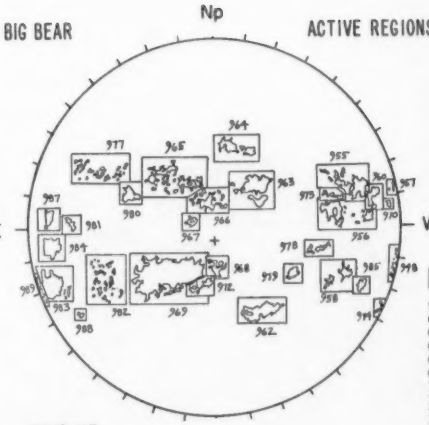


1740 UT

BOULDER PROMINENCES

1536 UT

BIG BEAR Np ACTIVE REGIONS



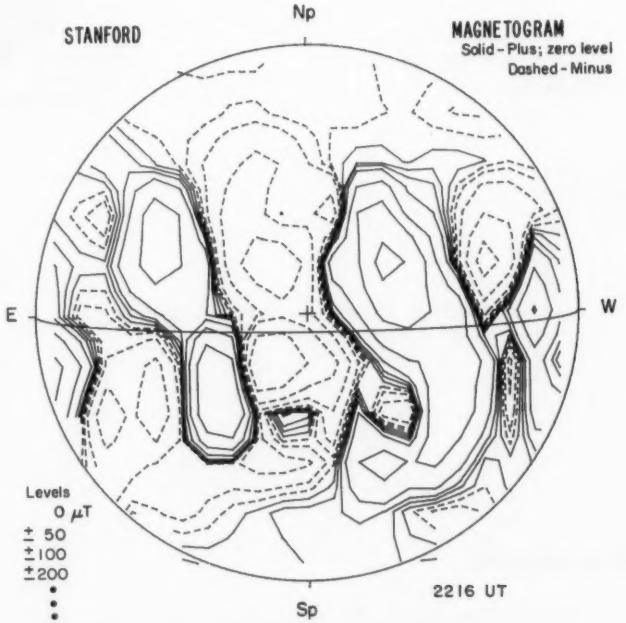
1742 UT

FAIR	WM

55- 2500-2.5
60- 0700-2.5
62- 1700-3.0
63- 2500-3.0
66- 1000-2.5
69- 7000-3.5
72- 0400-2.5
77- 0600-2.5
78- 0300-3.0
79- 0400-2.5
80- 1000-3.0
83- 3400-3.5
84- 1700-2.5
87- 0700-2.5
89- 0600-3.0

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



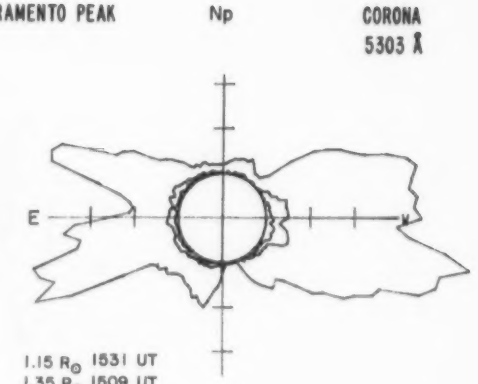
Levels
0 μT
± 50
±100
±200
• • •

2216 UT

55
Nov 81

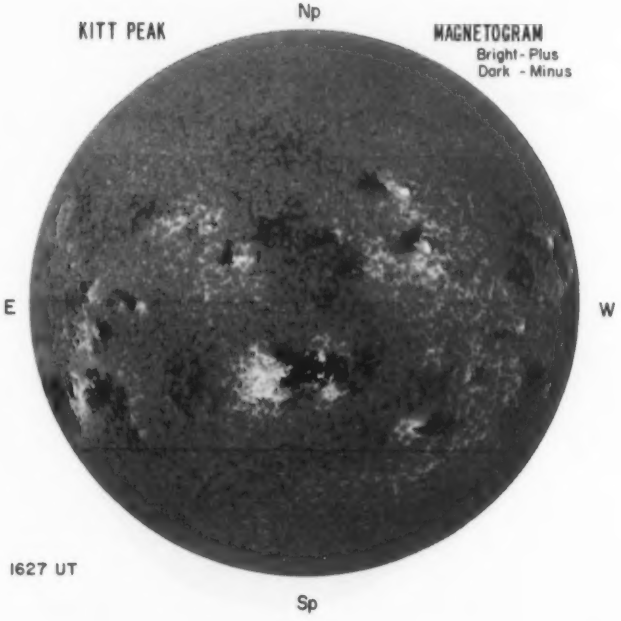
NOVEMBER 4, 1981 (P= 24.01, B_o= 4.05, L_o= 61.22)

SACRAMENTO PEAK



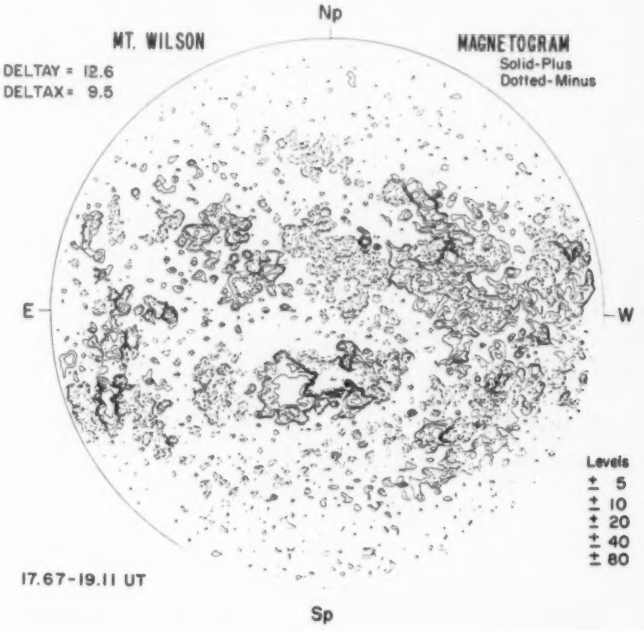
1.15 $R_\odot$ 1531 UT
1.35 $R_\odot$ 1509 UT
1.55 $R_\odot$ 1519 UT

KITT PEAK



1627 UT

MT. WILSON



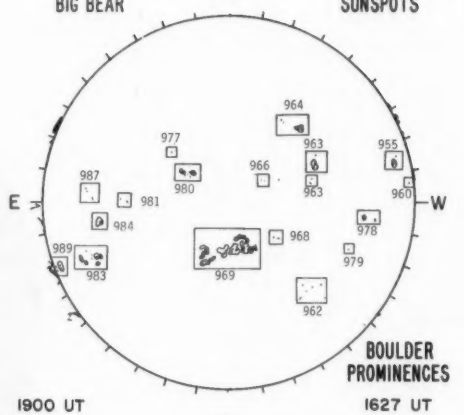
17.67-19.11 UT

04

SACRAMENTO PEAK Hα

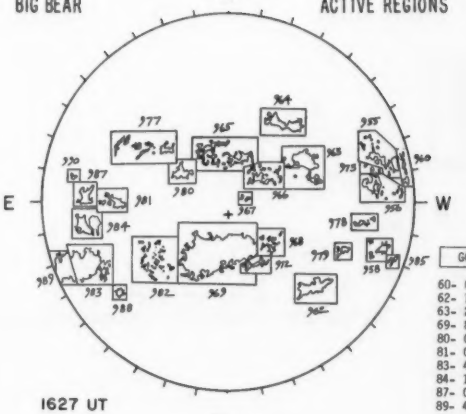
1439 UT

BIG BEAR SUNSPOTS



1900 UT

BIG BEAR ACTIVE REGIONS



1627 UT

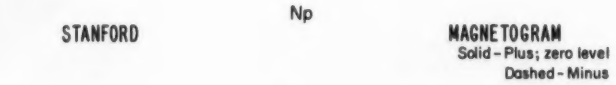
BOULDER PROMINENCES

1627 UT

GOOD	MM

60- 0500-2.5
62- 1400-2.5
63- 2400-2.5
69- 8000-4.0
80- 0700-2.5
81- 0700-2.5
83- 4500-4.0
84- 1900-2.5
87- 0700-2.5
89- 4000-3.5

STANFORD



MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

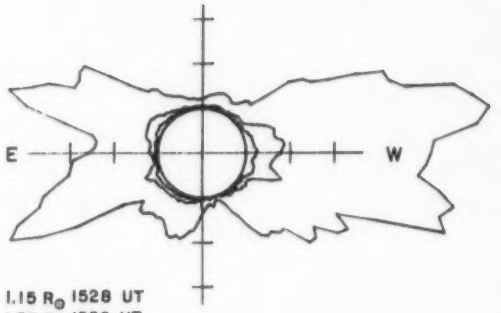
NO DATA NOVEMBER 4, 5, 6, 8, 10, 12, 13, 14, 15, 16, 20, 21, 22, 23, 25, 26, 27

Levels
0 μT
± 50
±100
±200

Sp

NOVEMBER 5, 1981 (P= 23.82, B_o= 3.94, L_o= 48.04)

SACRAMENTO PEAK Np CORONA
5303 Å

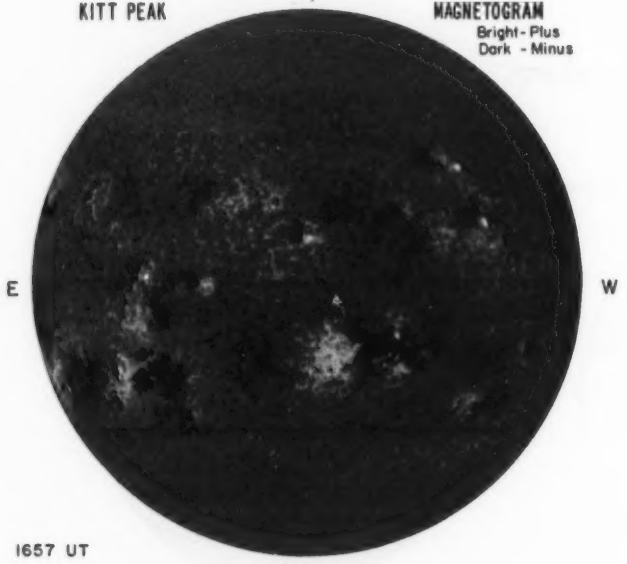


1.15 $R_\odot$ 1528 UT
1.35 $R_\odot$ 1506 UT
1.55 $R_\odot$ 1516 UT

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1657 UT

Sp

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =

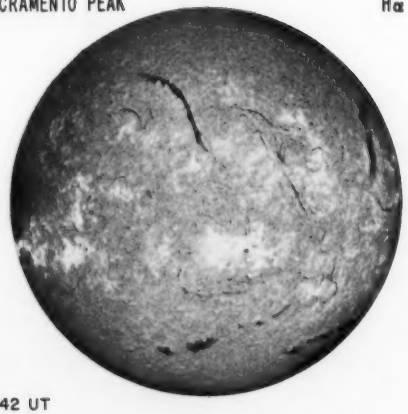
E NO DATA NOVEMBER 5, 6, 11, 12, 13, 14, 17, 20, 21, 22, 23, 26, 27, 28, 29, 30 W

Levels
± 5
± ± 10
± ± 20
± ± 40
± ± 80

Sp

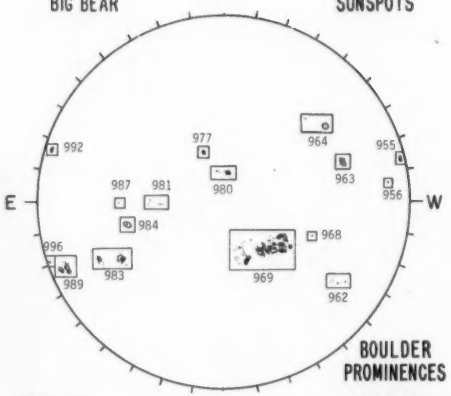
05

SACRAMENTO PEAK Hα



1442 UT

BIG BEAR SUNSPOTS

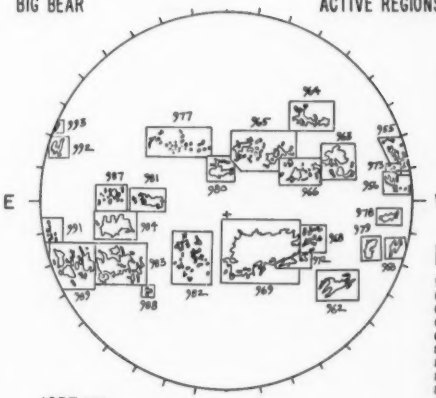


1840 UT

BOULDER PROMINENCES

NO DATA

BIG BEAR ACTIVE REGIONS



1657 UT

FAIR	WM
58- 0600-2.5	
62- 1400-2.5	
63- 2500-2.5	
64- 1400-2.5	
69- 8100-4.0	
80- 0600-2.5	
81- 0700-2.5	
83- 4000-3.5	
84- 2000-2.5	
89- 4200-3.5	
92- 1200-3.0	
93- 0300-2.5	

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E NO DATA W

Levels

0 μT

± 50

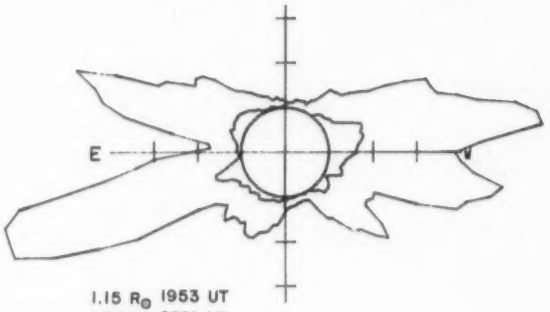
±100

±200

Sp

NOVEMBER 6, 1981 (P= 23.62, B_o = 3.84, L_o = 34.85)

SACRAMENTO PEAK Np CORONA
5303 Å



1.15 $R_\odot$ 1953 UT
1.35 $R_\odot$ 2001 UT
1.55 $R_\odot$

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

1613 UT

Sp

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =

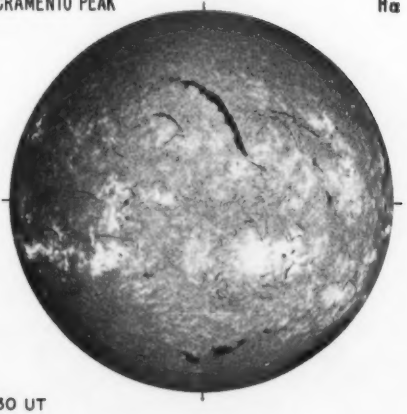
E NO DATA W

Levels
+ 5
++ 10
+++ 20
++++ 40
+++++ 80

Sp

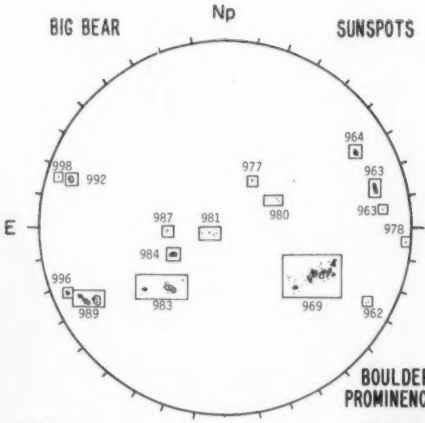
06

SACRAMENTO PEAK Hα



1530 UT

BIG BEAR SUNSPOTS

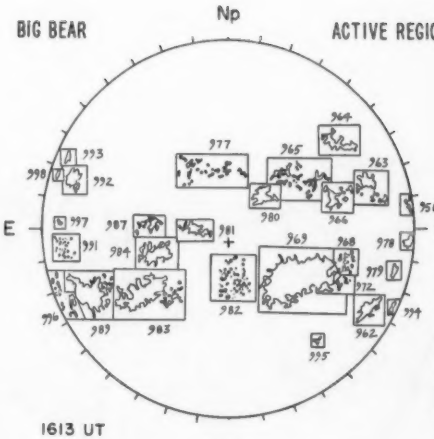


2310 UT

BOULDER PROMINENCES

NO DATA

BIG BEAR ACTIVE REGIONS



1613 UT

GOOD	MN
62-	1500-3.0
63-	2200-2.5
64-	1400-2.5
66-	1200-2.5
69-	8300-4.0
83-	4400-4.0
84-	1800-2.5
89-	4500-4.0
94-	0300-2.5
97-	0100-2.5
98-	0200-2.5

STANFORD

Np

NO DATA

E W

Sp

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

Levels

0 μT

± 50

±100

±200

•

••

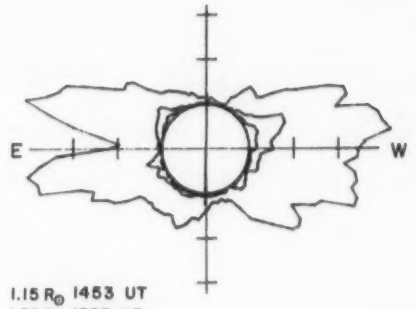
•

61

Nov 81

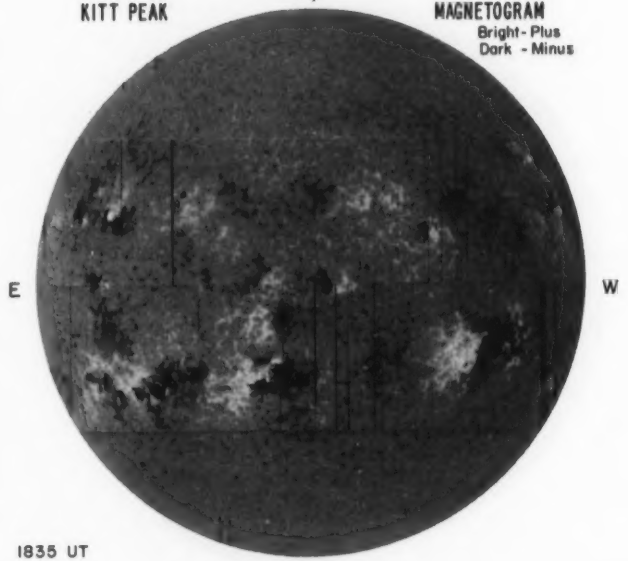
NOVEMBER 7, 1981 (P= 23.41, B_o= 3.73, L_o= 21.67)

SACRAMENTO PEAK Np CORONA
5303 Å



1.15 $R_\odot$ 1453 UT
1.35 $R_\odot$ 1503 UT
1.55 $R_\odot$ 1512 UT

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



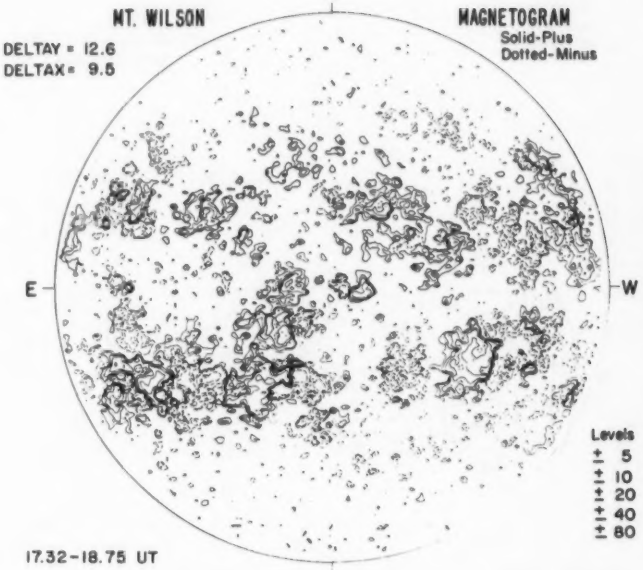
1835 UT

Sp

Sp Np

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

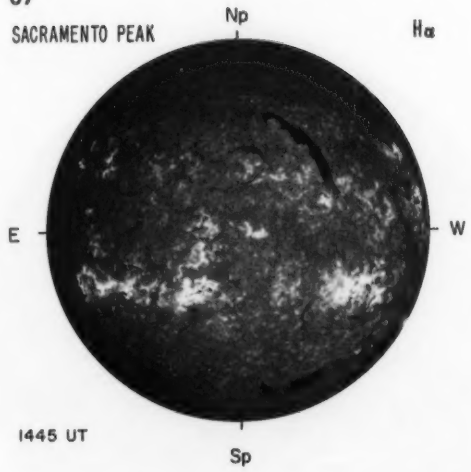
DELTAY = 12.6
DELTAX = 9.5

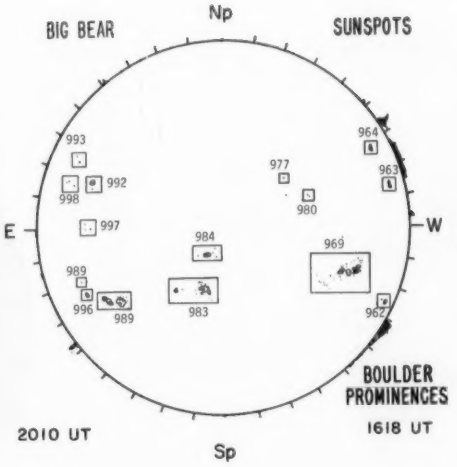


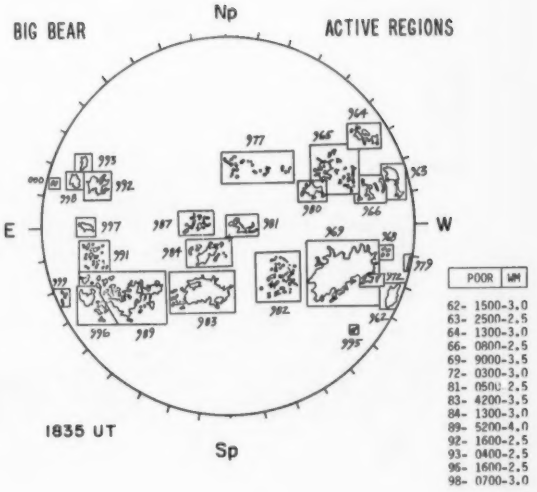
17.32-18.75 UT

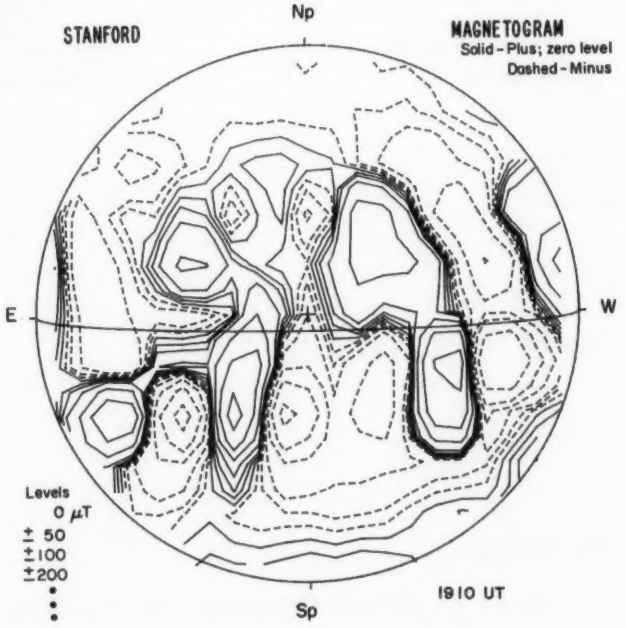
Sp

07


SACRAMENTO PEAK
Np
Hα
E
W
Sp
1445 UT


BIG BEAR
Np
SUNSPOTS
E
W
Sp
2010 UT
1618 UT
BOULDER
PROMINENCES

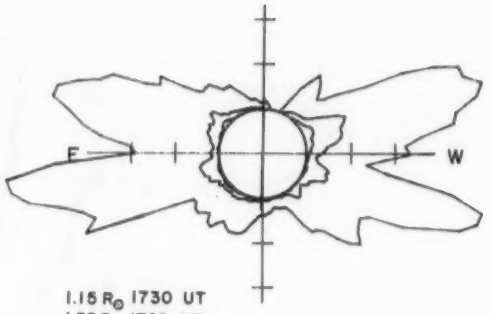

BIG BEAR
Np
ACTIVE REGIONS
E
W
Sp
1835 UT
POOR WM
62- 1500-3.0
63- 2500-2.5
64- 1300-3.0
66- 0800-2.5
69- 9000-3.5
72- 0300-3.0
81- 0500-2.5
83- 4200-3.5
84- 1300-3.0
89- 5200-4.0
92- 1600-2.5
93- 0400-2.5
96- 1600-2.5
98- 0700-3.0


STANFORD
Np
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus
E
W
Sp
1910 UT
Levels
0 μT
± 50
±100
±200

63
Nov 81

NOVEMBER 8, 1981 (P= 23.19, B_o= 3.62, L_o= 8.48)

SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 1730 UT
1.35 $R_\odot$ 1702 UT
1.55 $R_\odot$ 1711 UT

Sp

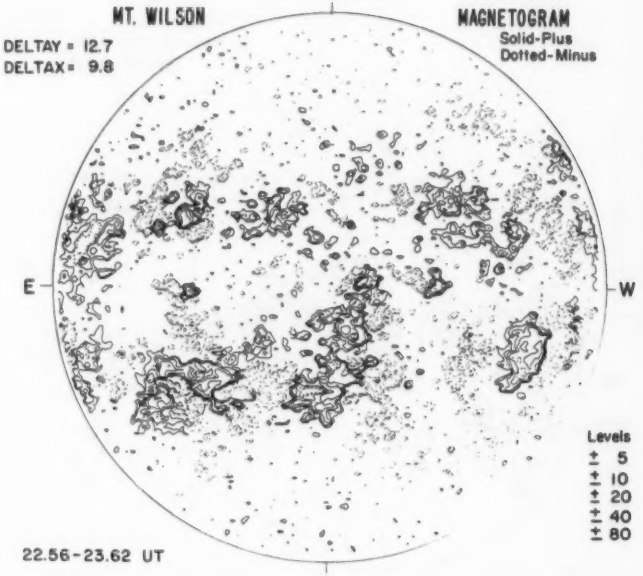
KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

1737 UT

Sp

MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.8



22.56-23.62 UT

Sp

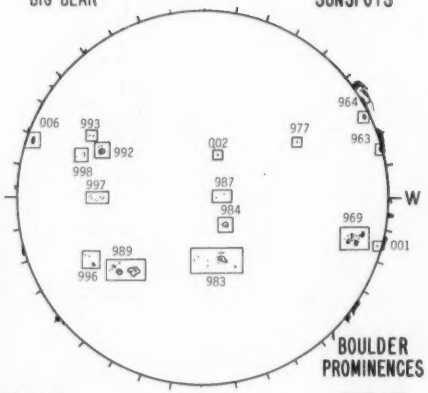
08

SACRAMENTO PEAK Np Hα

E W

1617 UT Sp

BIG BEAR Np SUNSPOTS

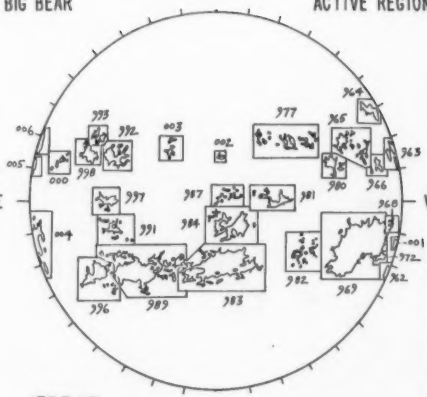


E W

BOULDER PROMINENCES

1900 UT Sp 2113 UT

BIG BEAR Np ACTIVE REGIONS



E W

Sp

GOOD	WM

62- 0500-3.0
63- 1700-2.5
64- 1500-3.0
66- 0600-2.5
69- 9500-3.5
80- 0900-2.5
83- 4800-3.5
84- 1500-2.5
89- 5000-3.5
92- 1600-3.0
96- 2200-3.0
97- 0600-4.0
98- 1100-2.5
01- 0300-3.5
04- 3000-3.0
05- 0500-2.5
06- 1000-3.0

STANFORD Np

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

E NO DATA W

Levels
0 μT
± 50
±100
±200
•
•
•

Sp

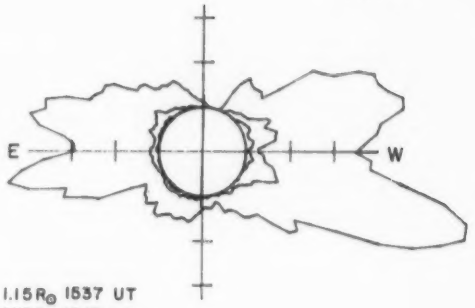
65 Nov 81

NOVEMBER 9, 1981 (P= 22.97, B_o= 3.51, L_o= 355.30)

SACRAMENTO PEAK

Np

CORONA
5303 Å

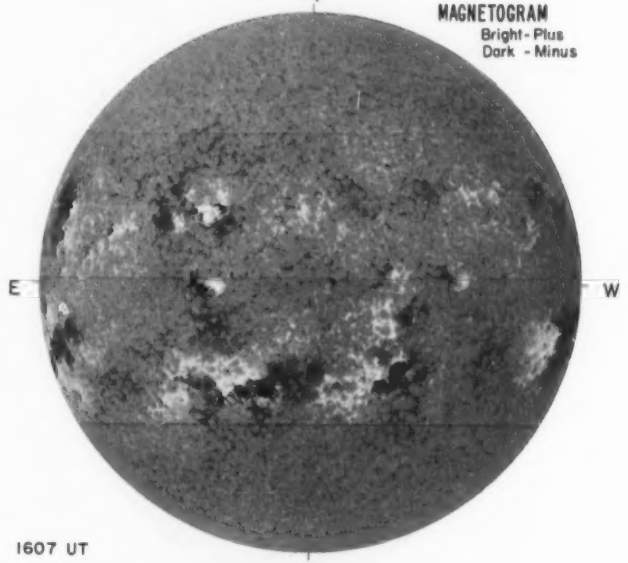


1.15 $R_\odot$ 1537 UT
1.35 $R_\odot$ 1517 UT
1.55 $R_\odot$ 1527 UT

Sp

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



1607 UT

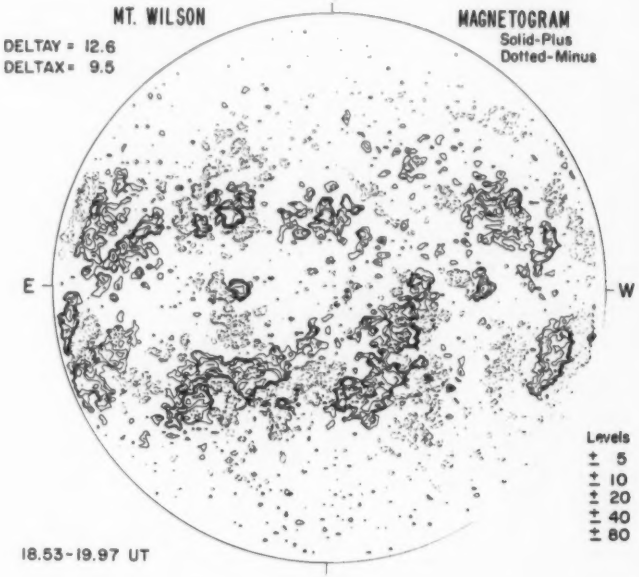
Sp

MT. WILSON

DELTAY = 12.6
DELTAX = 9.5

Np

MAGNETOGRAM
Solid - Plus
Dotted - Minus

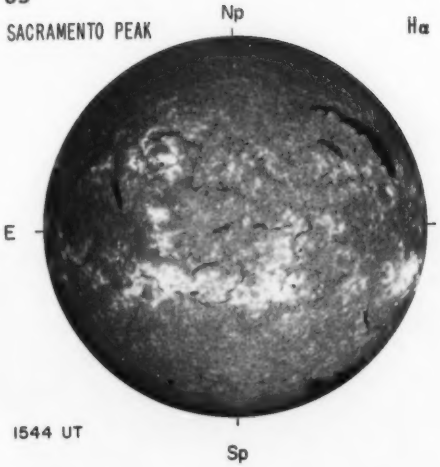


18.53 - 19.97 UT

Sp

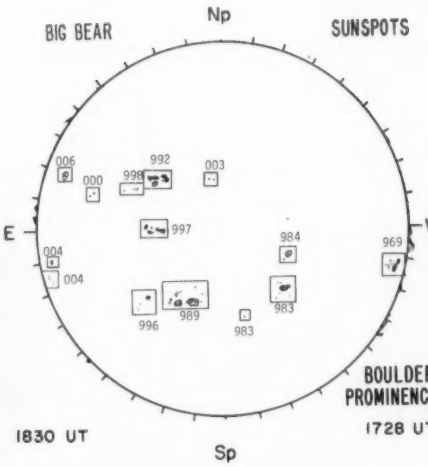
09

SACRAMENTO PEAK



1544 UT

BIG BEAR SUNSPOTS

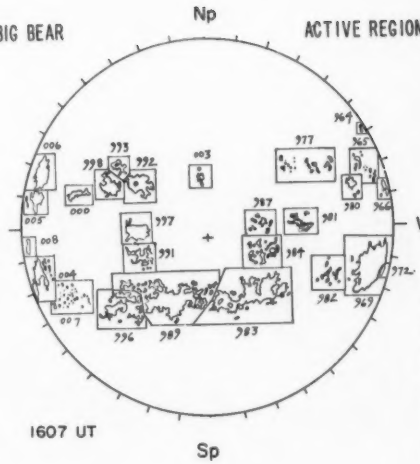


1830 UT

BOULDER PROMINENCES

1728 UT

BIG BEAR ACTIVE REGIONS

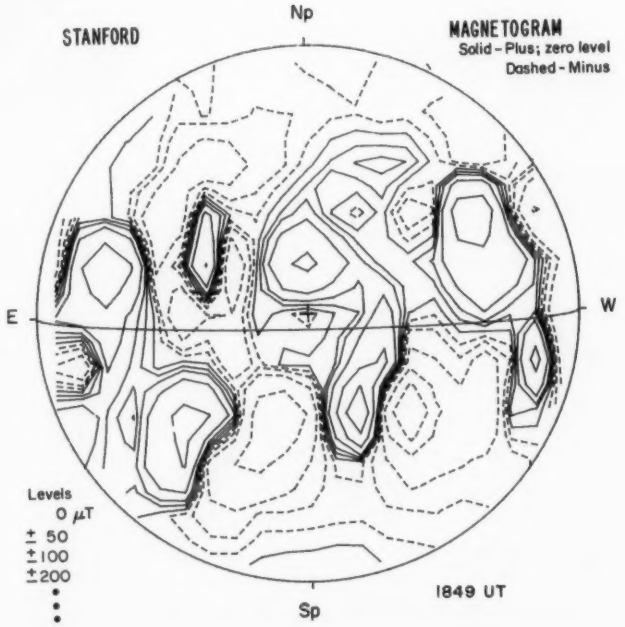


1607 UT

GOOD	WH
64-	0400-3.0
69-	8800-3.5
72-	0300-2.5
80-	0700-2.5
81-	0700-2.5
83-	4800-3.5
84-	1200-2.5
89-	5000-4.0
92-	1500-3.0
96-	2300-2.5
97-	1400-3.0
04-	4000-2.5
06-	3300-3.0

STANFORD

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

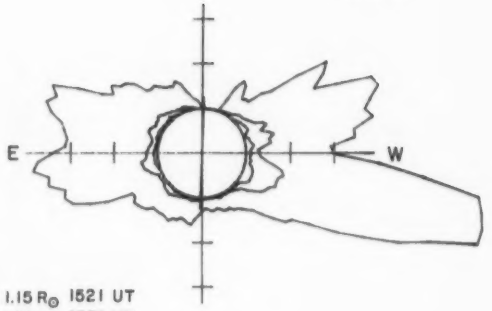


1849 UT

67
Nov 81

NOVEMBER 10, 1981 (P= 22.73, B_o= 3.40, L_o= 342.11)

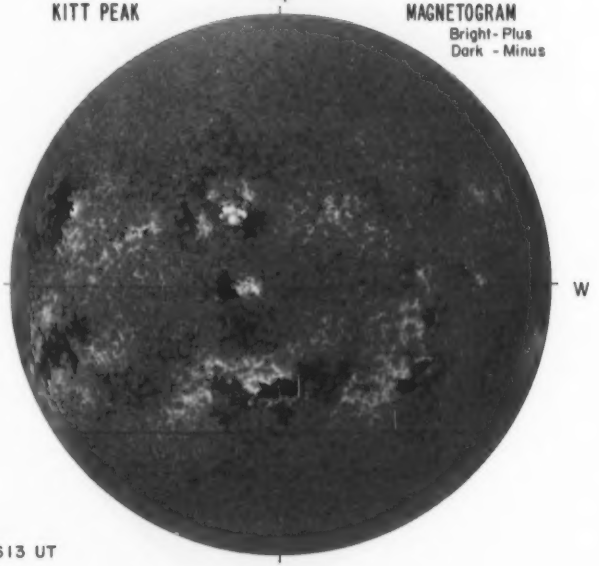
SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 1521 UT
1.35 $R_\odot$ 1501 UT
1.55 $R_\odot$ 1510 UT

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

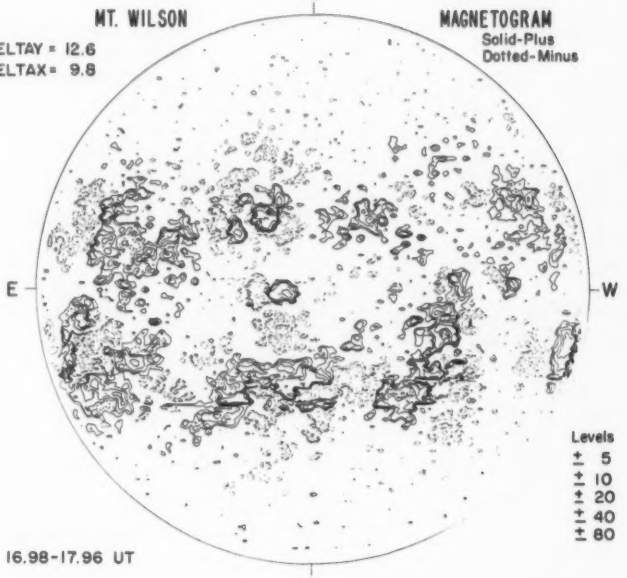


1613 UT

Sp

Np MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX= 9.8

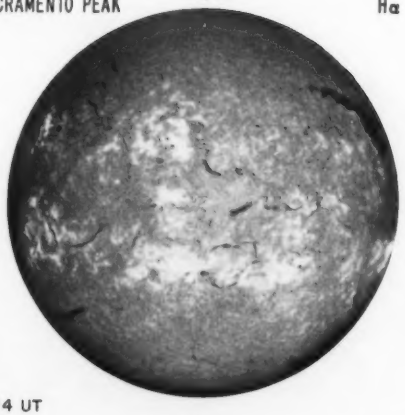


16.98-17.96 UT

Sp

10

SACRAMENTO PEAK — Np — Hα

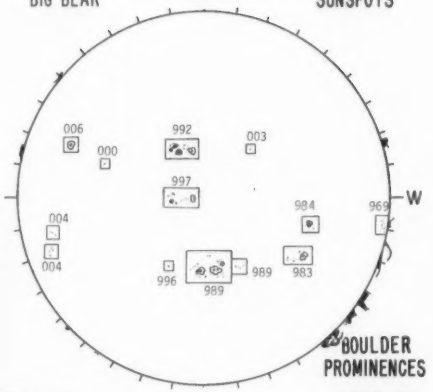


E W

1714 UT

Sp

BIG BEAR — Np — SUNSPOTS



E W

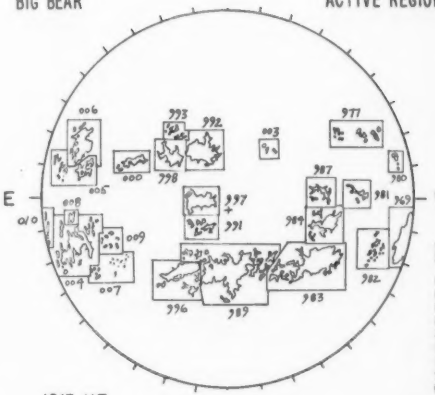
2043 UT

Sp

BOULDER PROMINENCES

1426 UT

BIG BEAR — Np — ACTIVE REGIONS



E W

1613 UT

Sp

6000	WM
69-	7500-4.0
81-	0600-2.5
83-	5000-3.5
84-	1400-2.5
89-	5500-3.5
92-	2500-3.5
97-	1500-3.5
98-	1100-2.5
00-	0500-2.5
04-	5000-2.5
06-	3200-3.5

STANFORD — Np

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

E — NO DATA — W

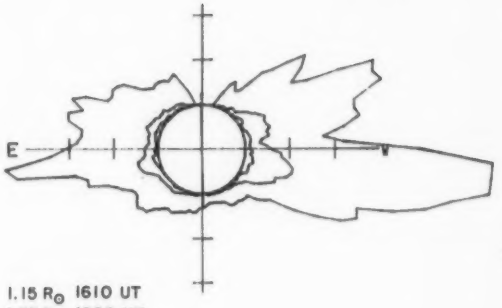
Levels
0 μT
± 50
±100
±200
•
•
•

Sp

69 Nov 81

NOVEMBER 11, 1981 (P= 22.49, B_o= 3.28, L_o= 328.93)

SACRAMENTO PEAK Np CORONA
5303 Å

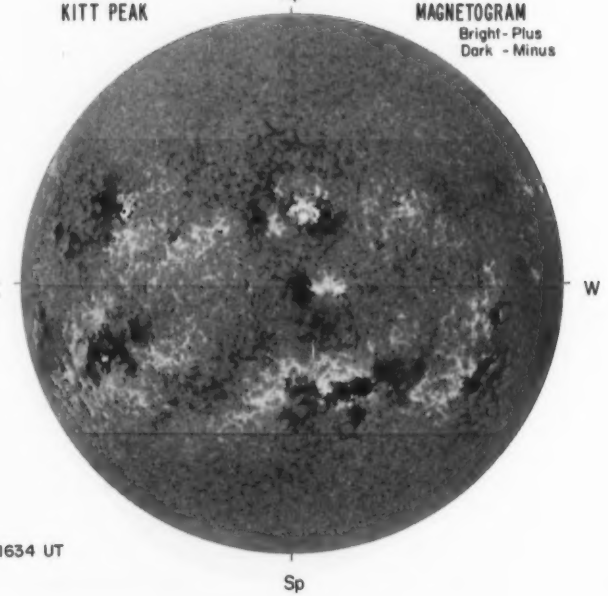


1.15 $R_\odot$ 1610 UT
1.35 $R_\odot$ 1550 UT
1.55 $R_\odot$ 1559 UT

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1634 UT

Sp

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX=

E NO DATA W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

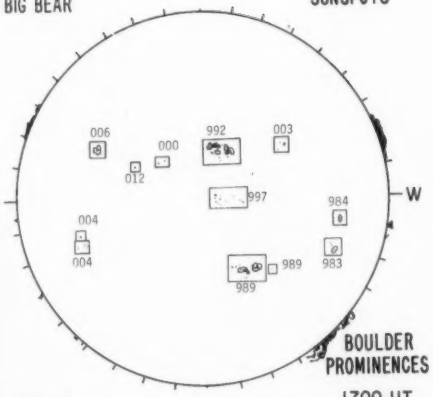
11

SACRAMENTO PEAK Np Hα

E W

1545 UT Sp

BIG BEAR Np SUNSPOTS

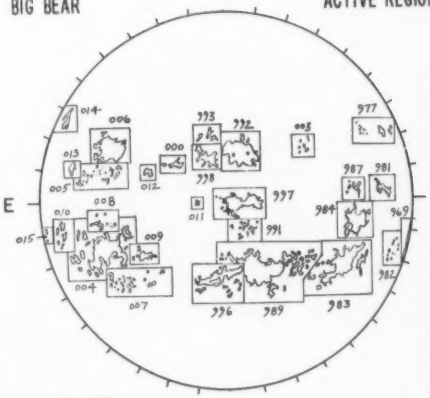


E W

BOULDER PROMINENCES

2008 UT Sp 1700 UT

BIG BEAR Np ACTIVE REGIONS



E W

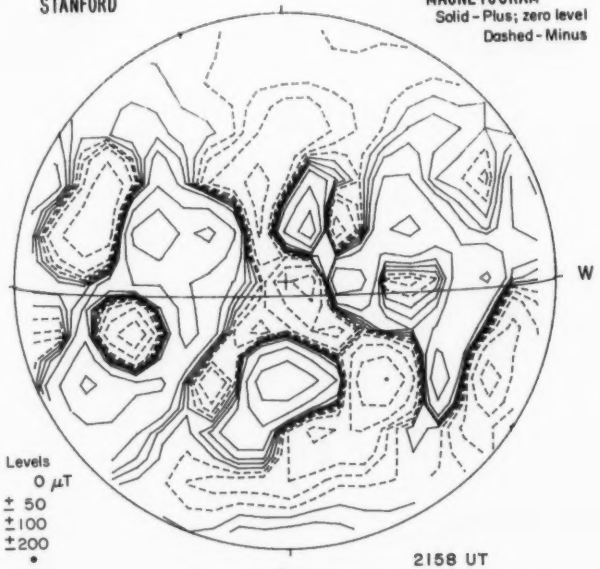
GOOD	WM

69- 1500-4.0
83- 4500-3.5
84- 1800-2.5
89- 5000-3.5
92- 3000-4.0
96- 1700-2.5
97- 1600-3.0
04- 5000-3.0
06- 3200-3.0
13- 0400-3.0
14- 0700-2.5

1634 UT Sp

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



E W

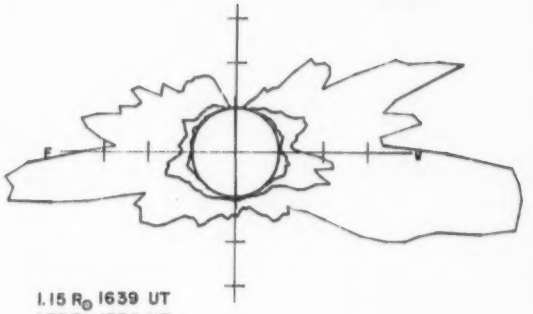
Levels
0 μT
± 50
±100
±200

2158 UT Sp

71
Nov 81

NOVEMBER 12, 1981 (P= 22.25, B_o= 3.17, L_o= 315.74)

SACRAMENTO PEAK Np CORONA 5303 Å

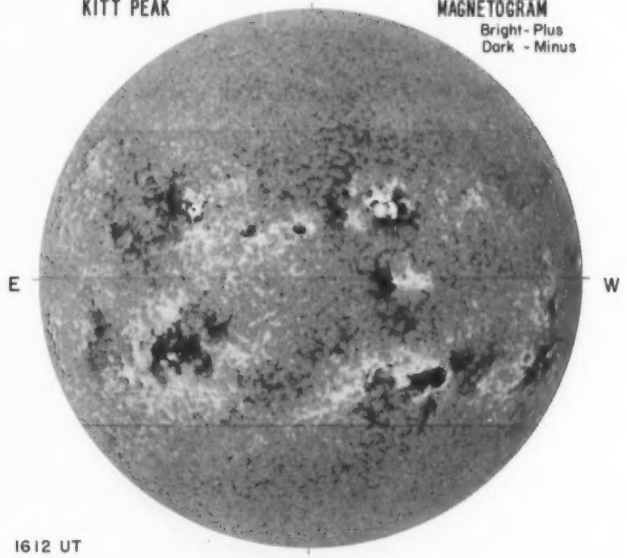


1.15 $R_\odot$ 1639 UT
1.35 $R_\odot$ 1554 UT
1.55 $R_\odot$ 1628 UT

Sp

Np

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



E W

1612 UT

Sp

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

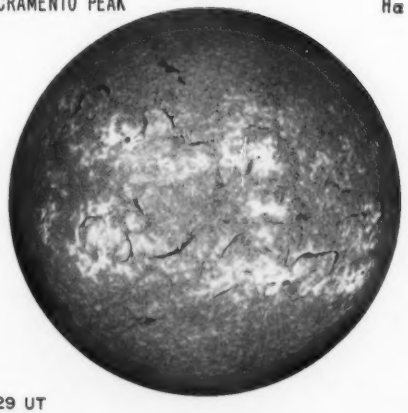
DELTAY =
DELTAX =

E NO DATA W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

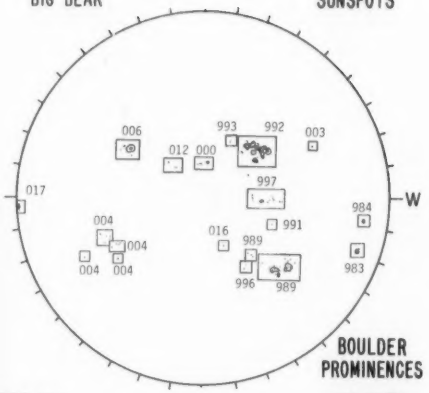
SACRAMENTO PEAK



Hα

1529 UT

BIG BEAR



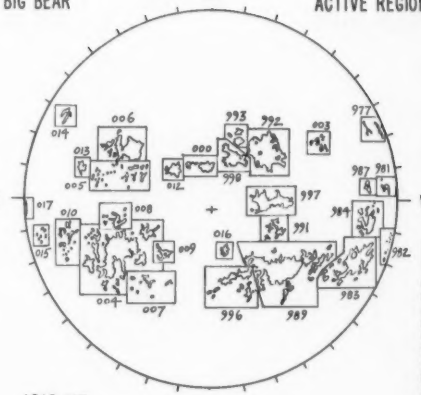
SUNSPOTS

1720 UT

BOULDER PROMINENCES

NO DATA

BIG BEAR



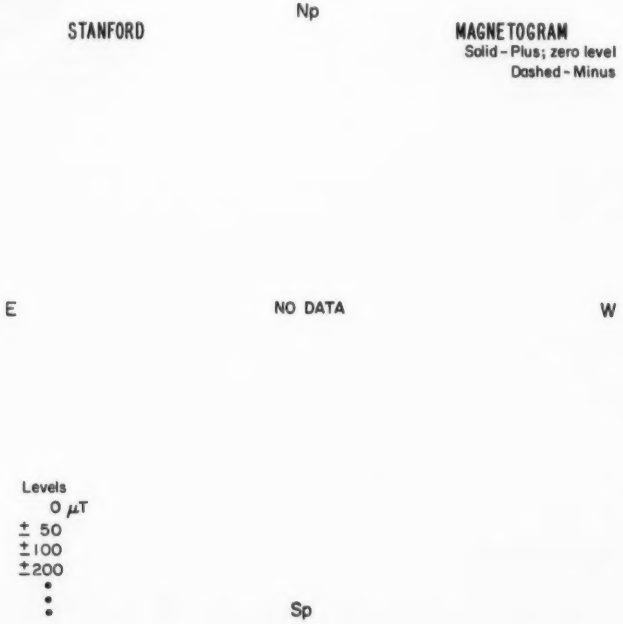
ACTIVE REGIONS

1612 UT

FAIR | WM

81- 0400-2.5
83- 4300-3.5
84- 1800-2.5
89- 5400-3.5
92- 3600-4.0
97- 1800-3.5
98- 1300-2.5
00- 0500-3.5
04- 5300-2.5
06- 3100-3.5
09- 0400-2.5
10- 0700-2.5
12- 0500-2.5
13- 0300-2.5
14- 0600-2.5
17- 0900-4.0

STANFORD



MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

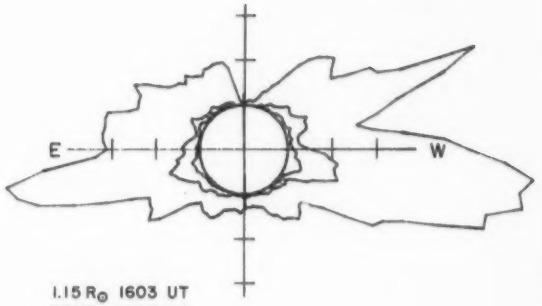
NO DATA

Levels
0 μT
± 50
±100
±200

73
Nov 81

NOVEMBER 13, 1981 (P= 21.99, B_o = 3.06, L_o = 302.56)

SACRAMENTO PEAK Np CORONA
5303 Å

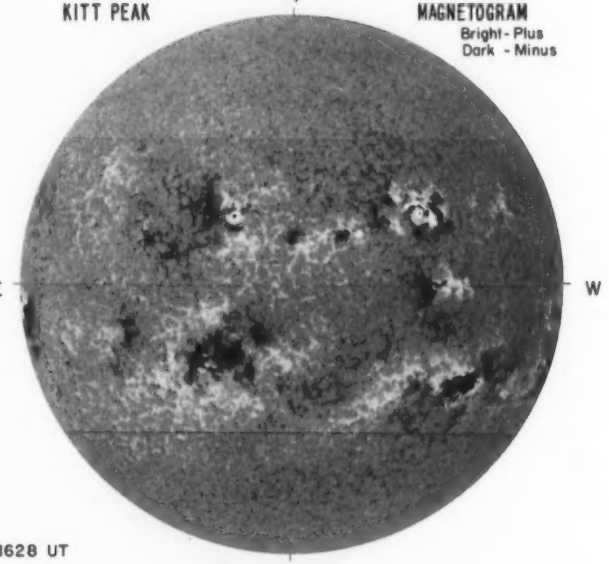


1.15 $R_\odot$ 1603 UT
1.35 $R_\odot$ 1532 UT
1.55 $R_\odot$ 1553 UT

Sp

Np

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



1628 UT

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

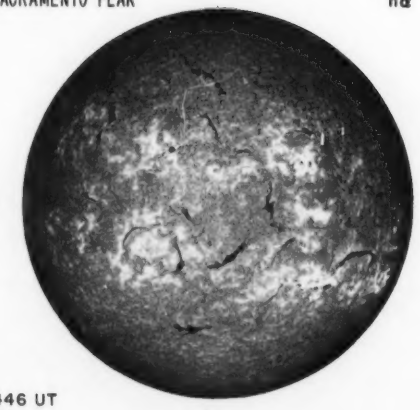
DELTAY =
DELTAX =

E NO DATA W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

SACRAMENTO PEAK — Np — Hα

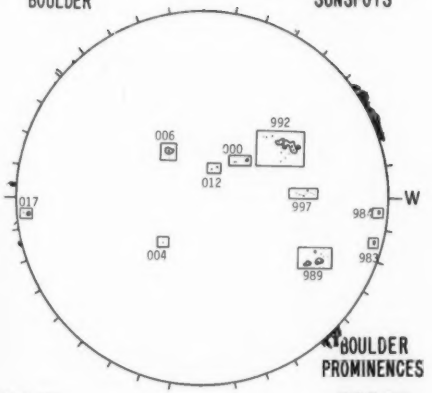


E W

1446 UT

Sp

BOULDER — Np — SUNSPOTS



E W

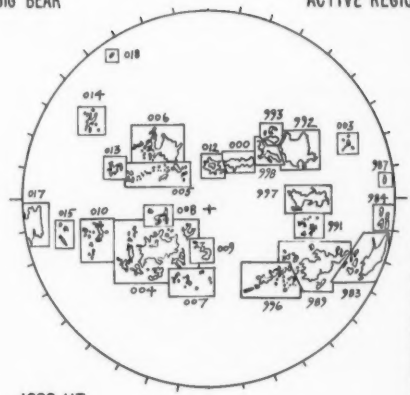
1650 UT

Sp

BOULDER PROMINENCES

1625 UT

BIG BEAR — Np — ACTIVE REGIONS



E W

1628 UT

Sp

GOOD	MM

83- 4700-3.5
84- 1300-2.5
87- 0200-2.5
89- 5100-3.5
92- 4100-3.5
93- 0500-3.5
97- 1900-3.5
00- 0900-2.5
04- 4900-2.5
06- 2800-3.0
12- 0500-2.5
17- 4500-3.5

STANFORD — Np

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

E NO DATA W

Levels
0 μT
± 50
±100
±200
•
•
•

Sp

75
Nov 81

NOVEMBER 14, 1981 (P= 21.73, B_o = 2.94, L_o = 289.38)

SACRAMENTO PEAK Np CORONA
5303 Å

NO DATA NOVEMBER 14, 17, 18, 19, 25, 27, 28, 29

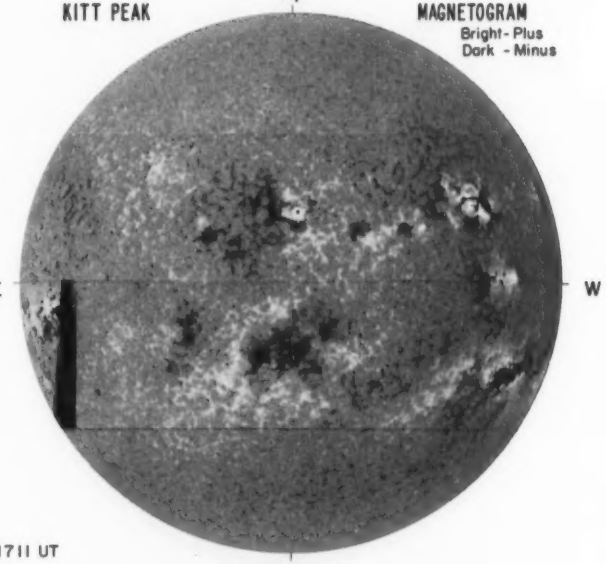
E W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



E W

1711 UT

Sp

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

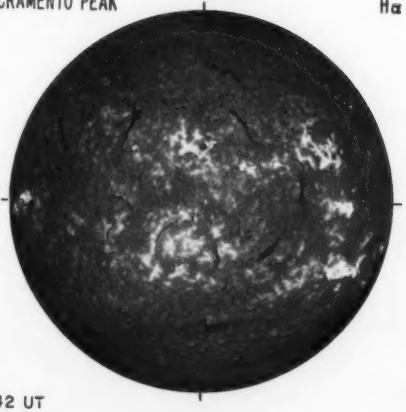
Levels
± 5
± 10
± 20
± 40
± 80

Sp

SACRAMENTO PEAK

Np

Hα



E

W

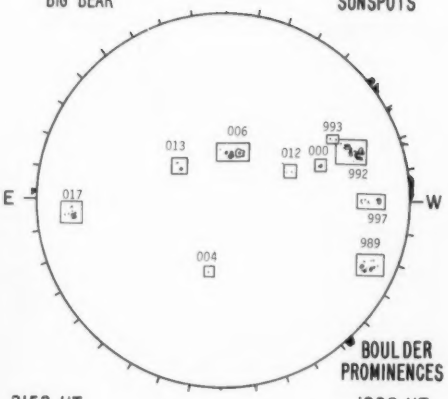
Sp

1442 UT

BIG BEAR

Np

SUNSPOTS



E

W

Sp

2152 UT

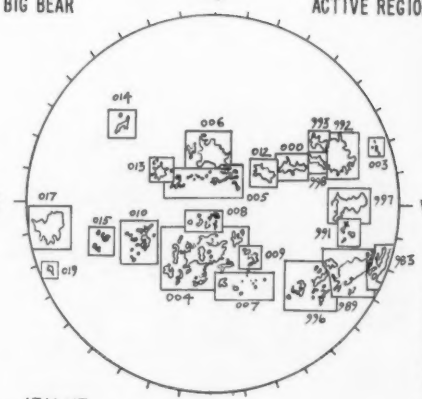
BOULDER PROMINENCES

1820 UT

BIG BEAR

Np

ACTIVE REGIONS



E

W

Sp

	POOR	WM

83- 3500-3.5
89- 5000-3.5
92- 4300-3.5
93- 0600-3.0
97- 2000-3.5
00- 0900-2.5
04- 5000-2.5
06- 2800-3.5
12- 0600-2.5
13- 0500-2.5
17- 5200-3.5
19- 0300-2.5

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

•

•

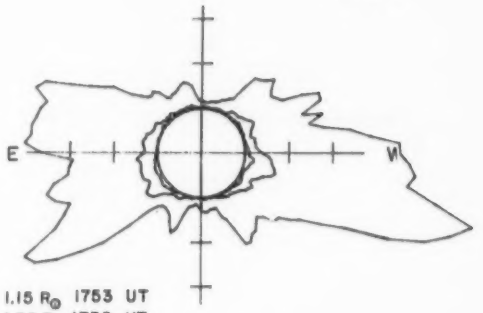
•

Sp

77 Nov 81

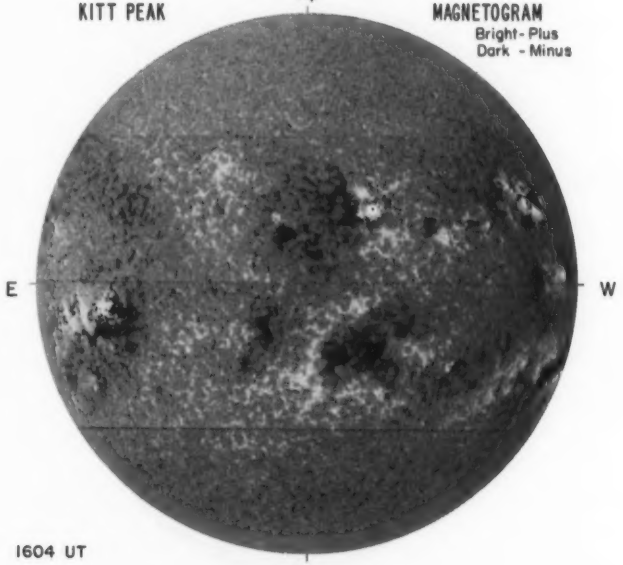
NOVEMBER 15, 1981 (P= 21.46, B_o= 2.82, L_o= 276.19)

SACRAMENTO PEAK Np CORONA
5303 Å



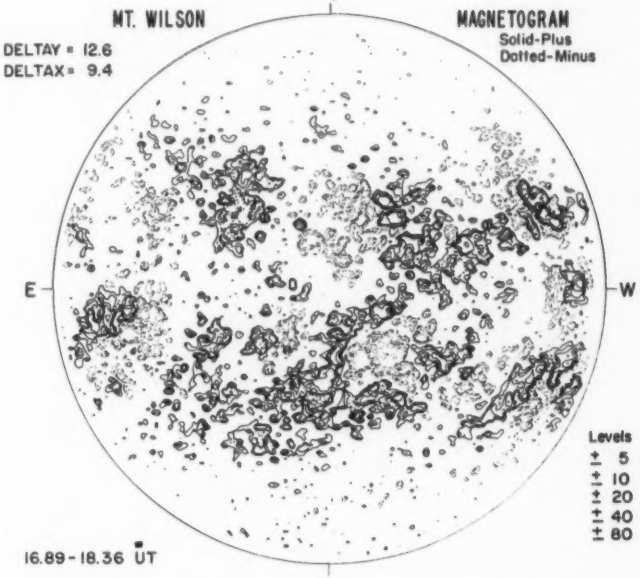
1.15 $R_\odot$ 1753 UT
1.35 $R_\odot$ 1732 UT
1.55 $R_\odot$ 1742 UT

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1604 UT

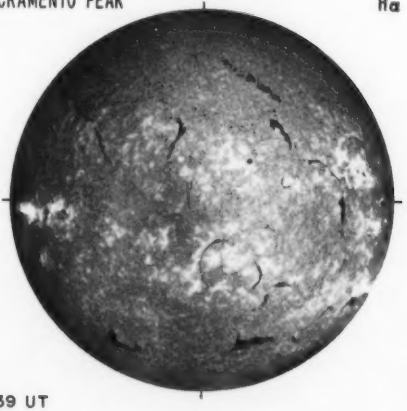
Sp
Np
MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.6
DELTAX = 9.4



16.89 - 18.36 UT

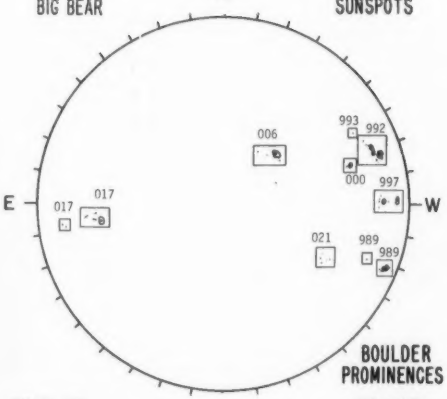
15

SACRAMENTO PEAK Hα



1439 UT

BIG BEAR SUNSPOTS

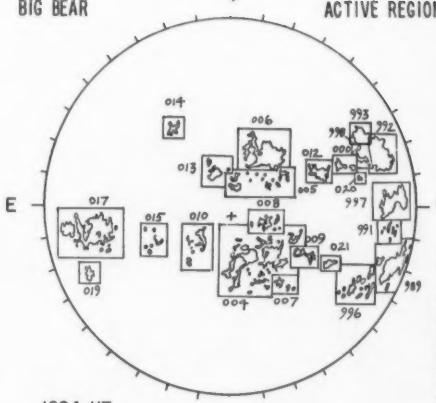


2015 UT

BOULDER PROMINENCES

NO DATA

BIG BEAR ACTIVE REGIONS



GOOD	MM

89- 4700-3.5
92- 4300-3.5
93- 1500-3.5
97- 2500-3.0
98- 0500-2.5
04- 4900-2.5
06- 3000-3.0
12- 0800-2.5
13- 0500-3.0
17- 5500-3.5
21- 0300-3.5

1604 UT

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E NO DATA W

Levels

0 μT

± 50

±100

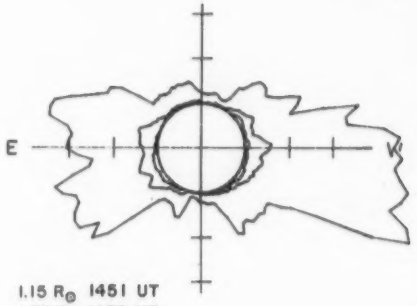
±200

Sp

79 Nov 81

NOVEMBER 16, 1981 (P=21.18, B_o= 2.71, L_o= 263.01)

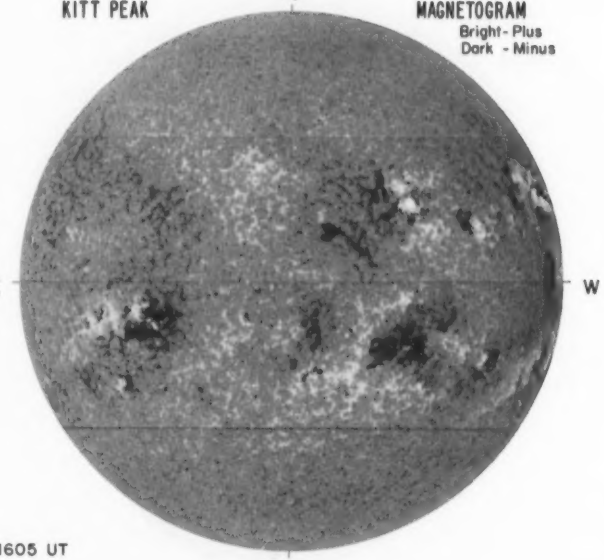
SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 1451 UT
1.35 $R_\odot$ 1459 UT
1.55 $R_\odot$ 1510 UT

Sp

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus

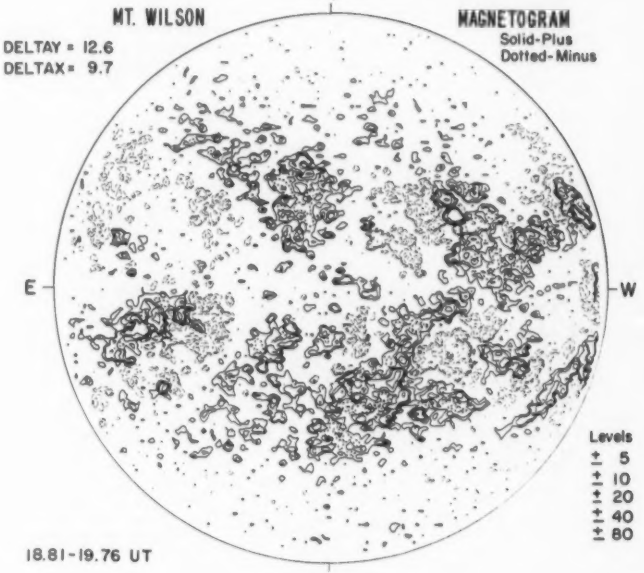


1605 UT

Sp

MT. WILSON Np MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX= 9.7



18.81-19.76 UT

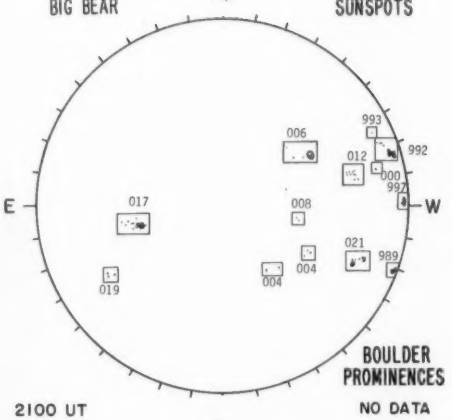
Sp

16

SACRAMENTO PEAK Hα

1444 UT

BIG BEAR SUNSPOTS

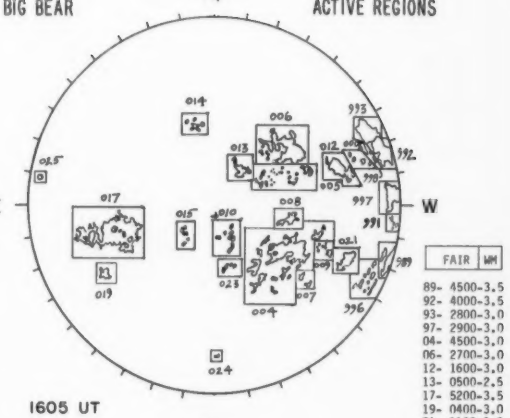


2100 UT

BOULDER PROMINENCES

NO DATA

BIG BEAR ACTIVE REGIONS



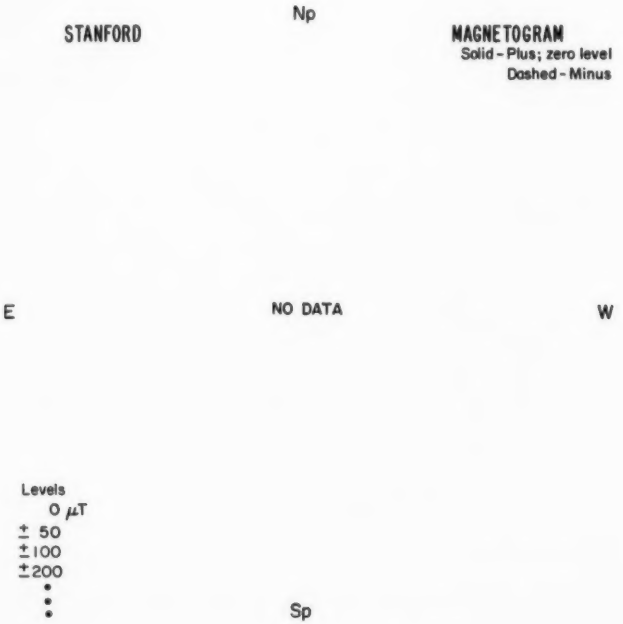
1605 UT

FAIR	WM

89- 4500-3.5
92- 4000-3.5
93- 2800-3.0
97- 2900-3.0
04- 4500-3.0
06- 2700-3.0
12- 1600-3.0
13- 0500-2.5
17- 5200-3.5
19- 0400-3.0
21- 1100-3.0
23- 0200-2.5

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



Levels
0 μT
± 50
±100
±200
•
•
•

81
Nov 81

NOVEMBER 17, 1981 (P= 20.89, B_o= 2.59, L_o= 249.83)

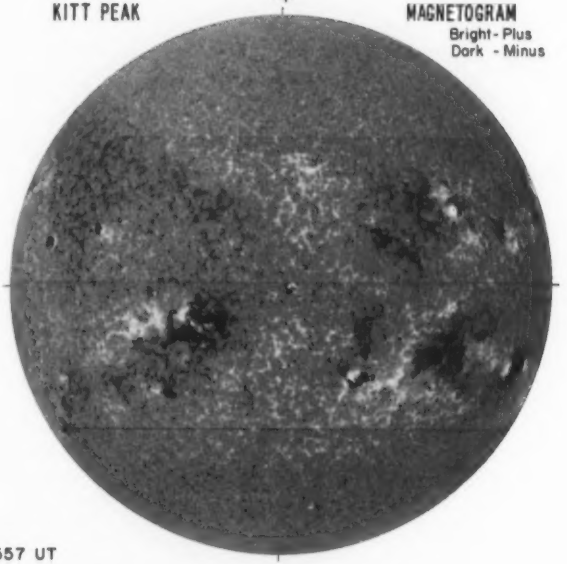
SACRAMENTO PEAK Np CORONA
5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp
Np

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



1557 UT

MT. WILSON

DELTAY =
DELTAX =

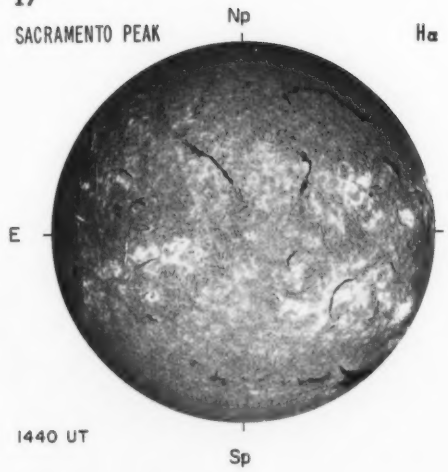
MAGNETOGRAM
Solid-Plus
Dotted-Minus

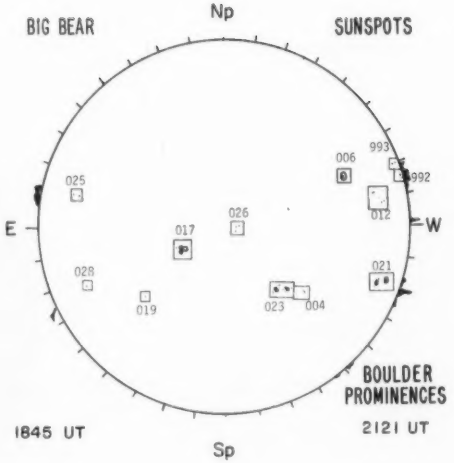
E NO DATA W

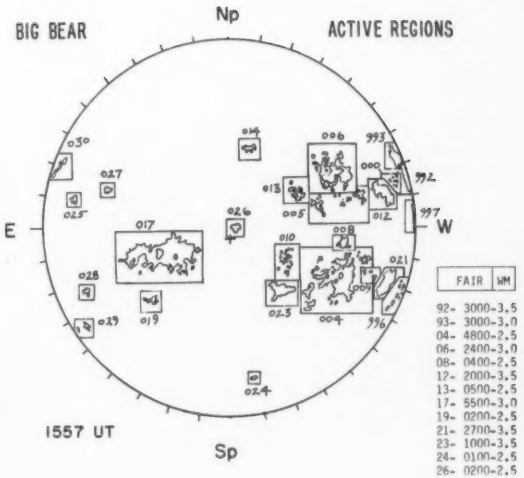
Levels
+ 5
+ + 10
+ + + 20
+ + + + 40
+ + + + + 80

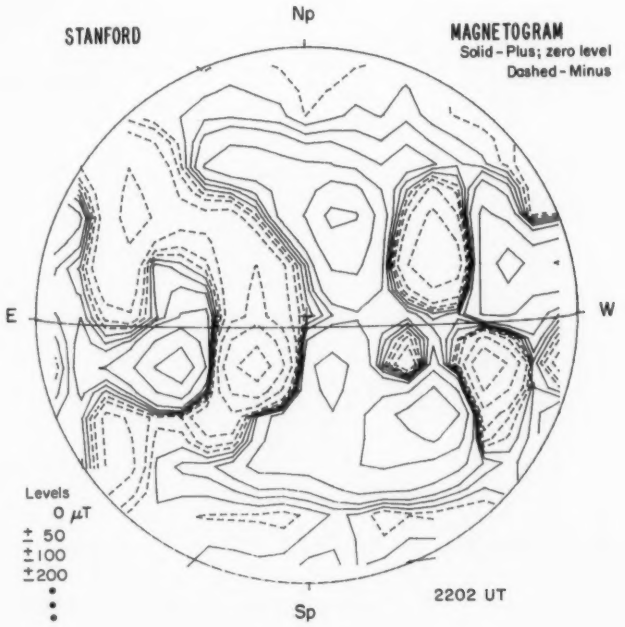
Sp

17


SACRAMENTO PEAK
Np
Hα
E
W
Sp
1440 UT


BIG BEAR
Np
SUNSPOTS
E
W
Sp
1845 UT
BOULDER
PROMINENCES
2121 UT


BIG BEAR
Np
ACTIVE REGIONS
E
W
Sp
1557 UT
FAIR | HM
92- 3000-3.5
93- 3000-3.0
04- 4800-2.5
06- 2400-3.0
08- 0400-2.5
12- 2000-3.5
13- 0500-2.5
17- 5500-3.0
19- 0200-2.5
21- 2700-3.5
23- 1000-3.5
24- 0100-2.5
26- 0200-2.5

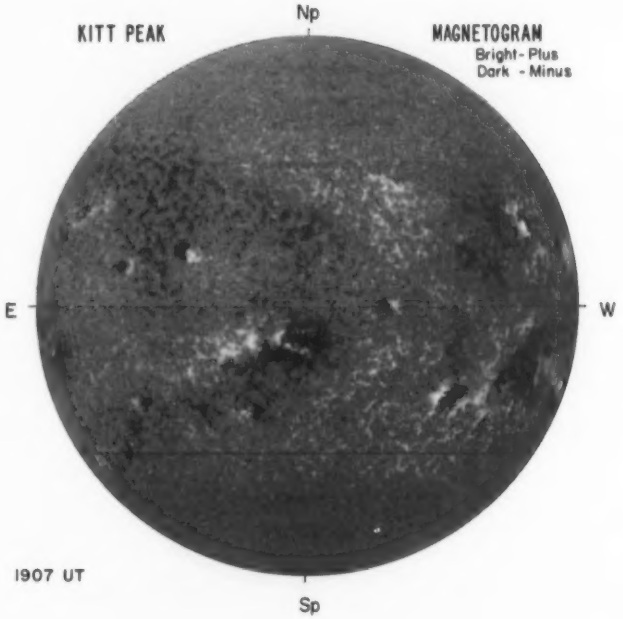

STANFORD
Np
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus
E
W
Sp
2202 UT
Levels
0 μT
± 50
±100
±200

NOVEMBER 18, 1981 (P= 20.60, B_o = 2.47, L_o = 236.65)

SACRAMENTO PEAK Np CORONA 5303 Å

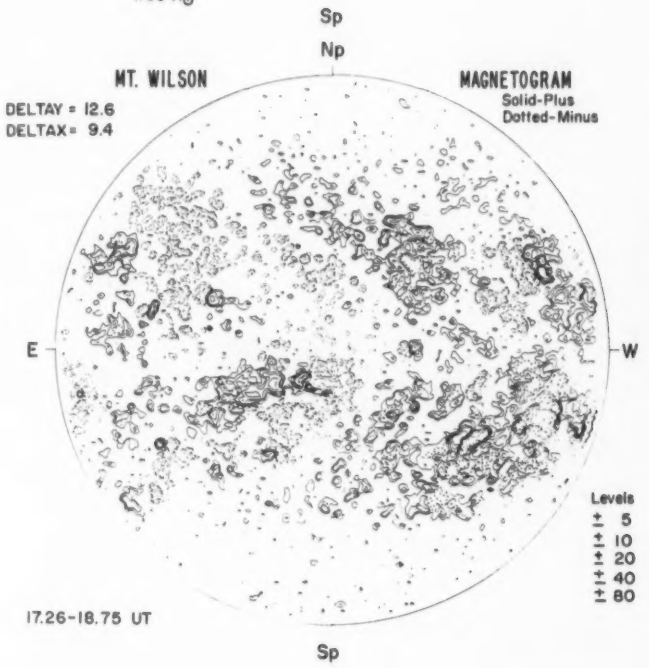
E NO DATA W

KITT PEAK

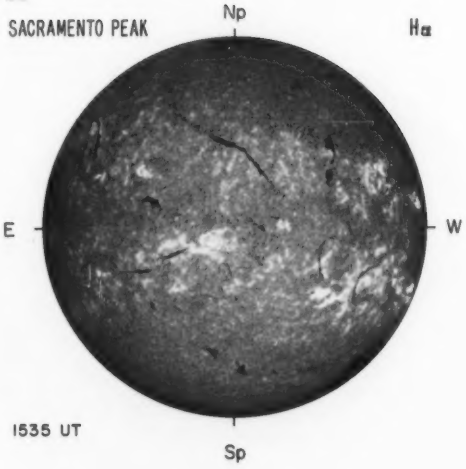


1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

MT. WILSON

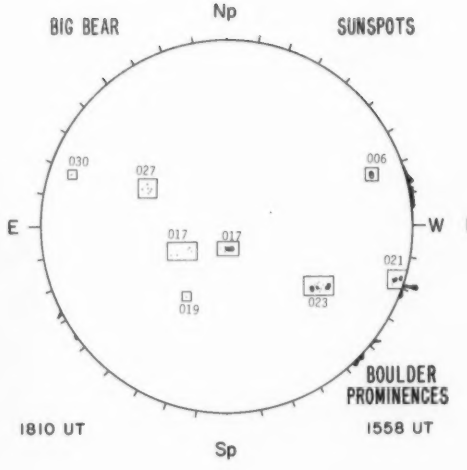


SACRAMENTO PEAK Hα



1535 UT

BIG BEAR SUNSPOTS

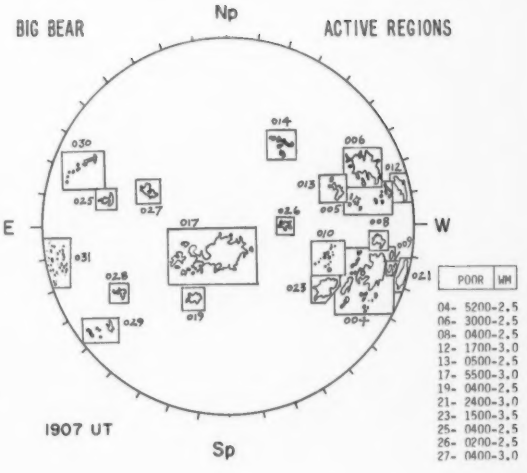


1810 UT

BOULDER PROMINENCES

1558 UT

BIG BEAR ACTIVE REGIONS



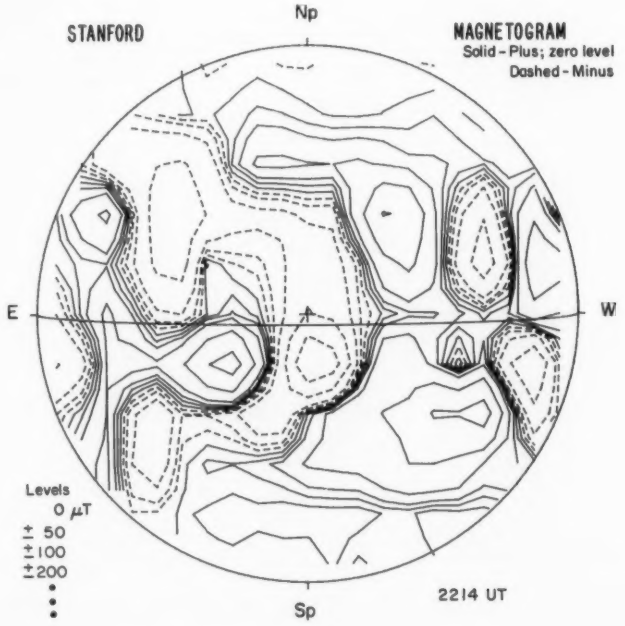
POOR	WM

04- 5200-2.5
06- 3000-2.5
08- 0400-2.5
12- 1700-3.0
13- 0500-2.5
17- 5500-3.0
19- 0400-2.5
21- 2400-3.0
23- 1500-3.5
25- 0400-2.5
26- 0200-2.5
27- 0400-3.0

1907 UT

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



2214 UT

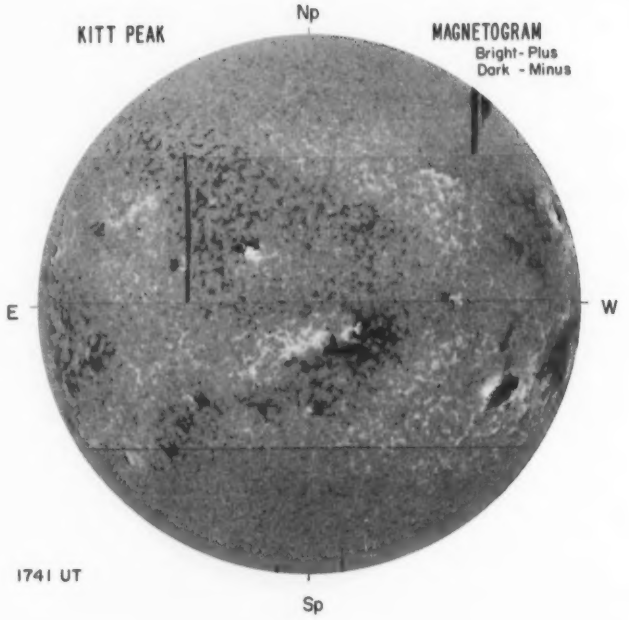
85
Nov 81

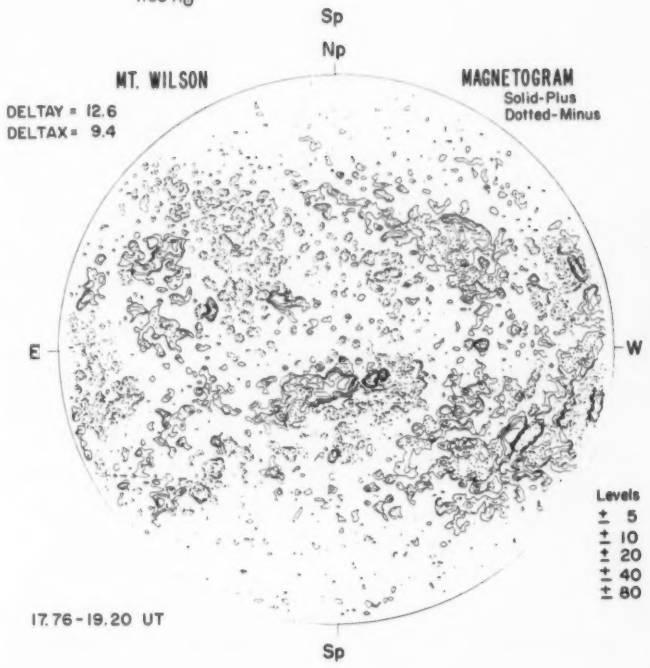
NOVEMBER 19, 1981 (P= 20.30, B_o= 2.35, L_o= 223.46)

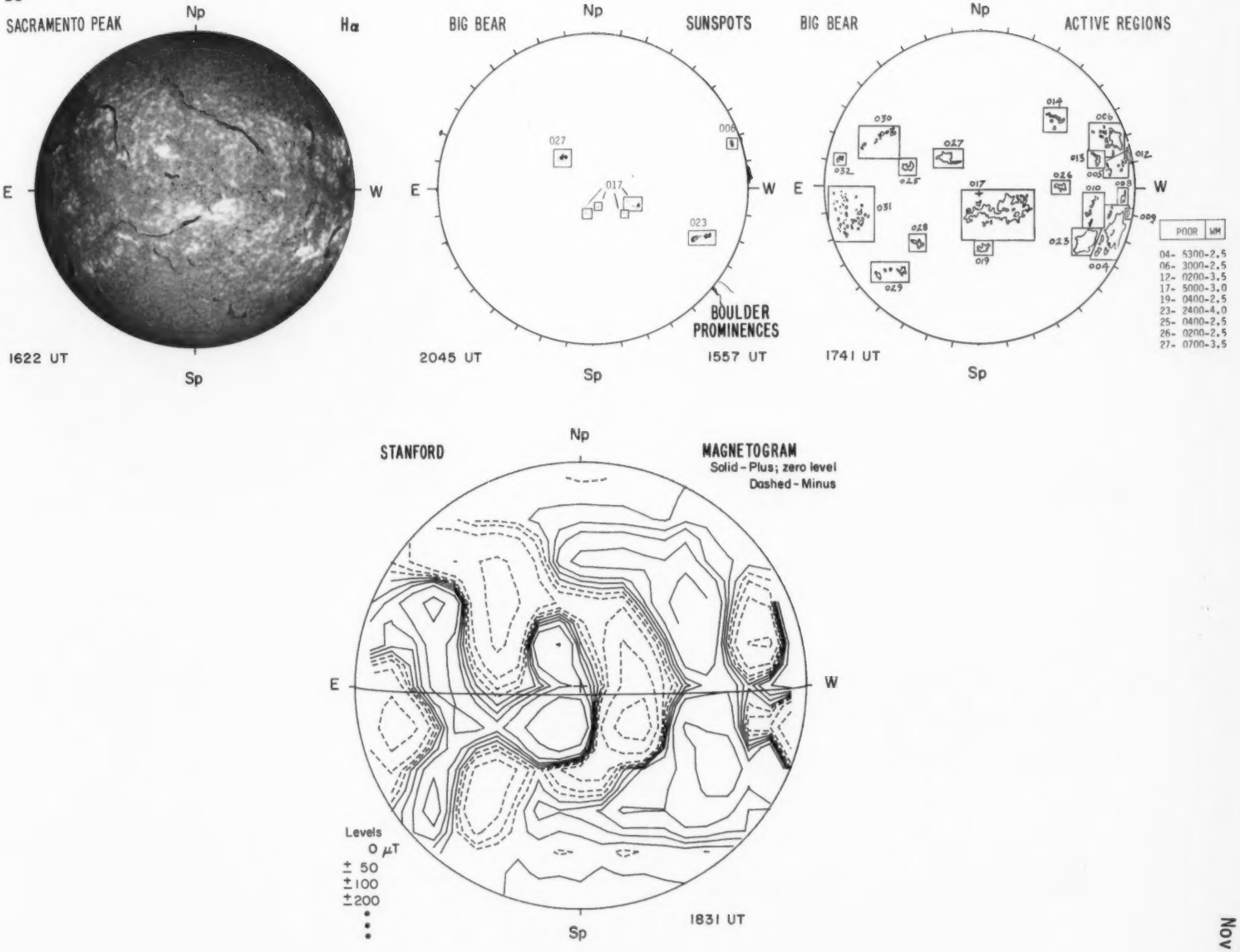
SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

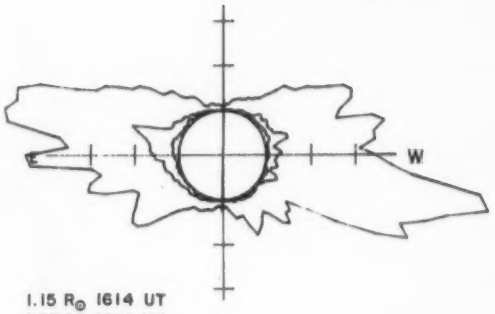





SACRAMENTO PEAK
Np
Hα
E
W
Sp
1622 UT
BIG BEAR
Np
SUNSPOTS
027
017
006
023
E
W
BOULDER
PROMINENCES
2045 UT
Sp
1557 UT
BIG BEAR
Np
ACTIVE REGIONS
030
014
026
027
032
025
013
012
005
024
017
031
010
028
023
009
019
004
029
E
W
POOR
WM
04- 5300-2.5
06- 3000-2.5
12- 0200-3.5
17- 5000-3.0
19- 0400-2.5
23- 2400-4.0
25- 0400-2.5
26- 0200-2.5
27- 0700-3.5
Sp
1741 UT
STANFORD
Np
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus
E
W
Levels
0 μT
± 50
±100
±200
Sp
1831 UT

NOVEMBER 20, 1981 (P= 19.99, B_o = 2.23, L_o = 210.28)

SACRAMENTO PEAK Np CORONA
5303 Å

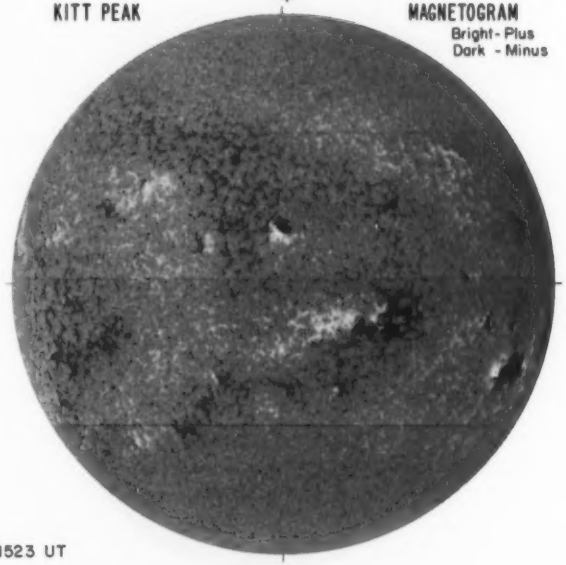


1.15 $R_\odot$ 1614 UT
1.35 $R_\odot$ 1554 UT
1.55 $R_\odot$ 1603 UT

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1523 UT

Sp

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =

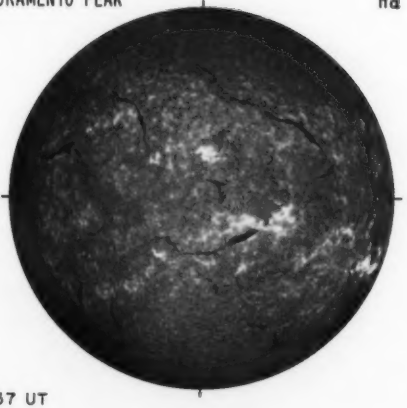
E NO DATA W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

20

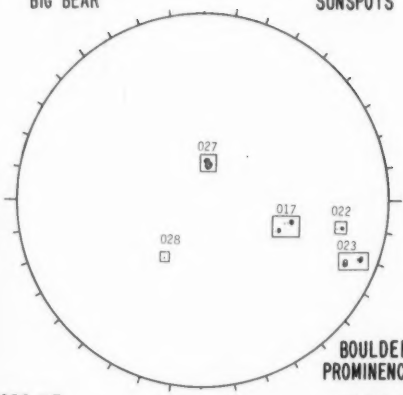
SACRAMENTO PEAK Np Hα



E W

1537 UT Sp

BIG BEAR Np SUNSPOTS



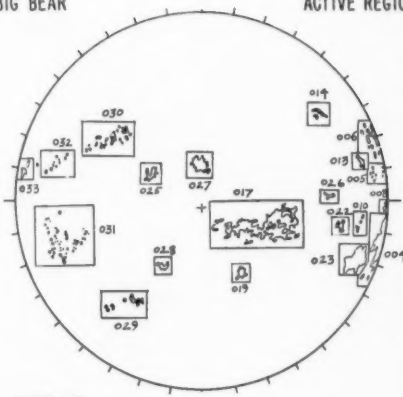
E W

1920 UT Sp

BOULDER PROMINENCES

NO DATA

BIG BEAR Np ACTIVE REGIONS



E W

1523 UT Sp

STANFORD Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E NO DATA W

Levels

0 μT

± 50

±100

±200

•

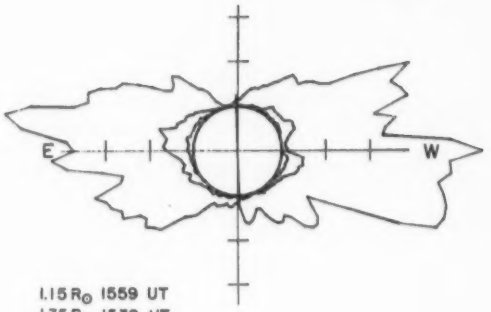
•

•

Sp

NOVEMBER 21, 1981 (P= 19.67, B_o= 2.10, L_o= 197.10)

SACRAMENTO PEAK Np CORONA
5303 Å

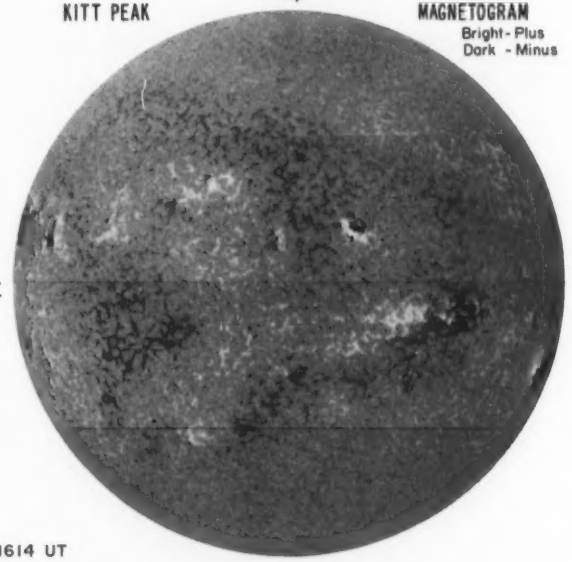


1.15 $R_\odot$ 1559 UT
1.35 $R_\odot$ 1539 UT
1.55 $R_\odot$ 1548 UT

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1614 UT

Sp

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

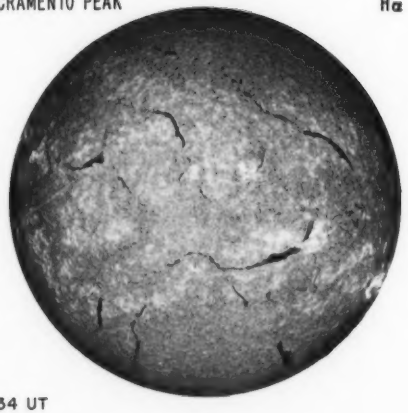
DELTAY =
DELTAX =

E NO DATA W

Levels
+ 5
+ + 10
+ + + 20
+ + + + 40
+ + + + + 80

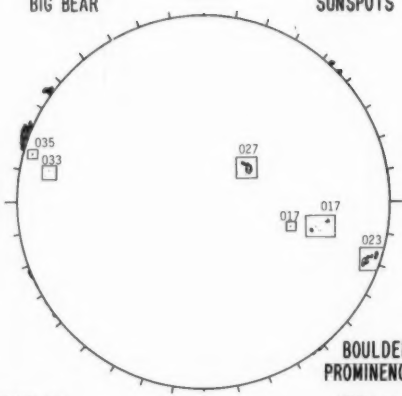
Sp

SACRAMENTO PEAK Hα



1434 UT

BIG BEAR SUNSPOTS

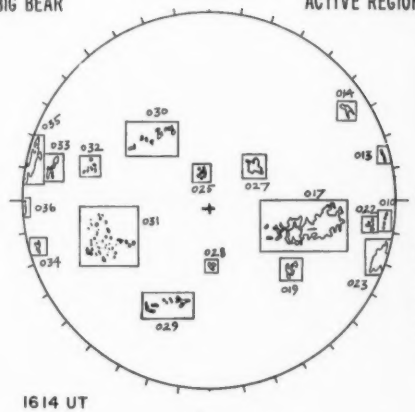


1840 UT

BOULDER PROMINENCES

1505 UT

BIG BEAR ACTIVE REGIONS

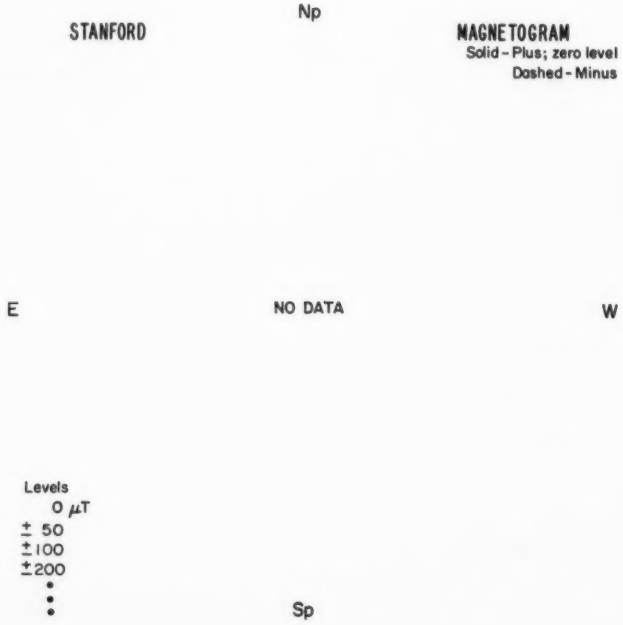


GOOD	NM

17- 5000-3.5
19- 0400-2.5
23- 3000-3.5
27- 0700-3.5
35- 3400-2.5

1614 UT

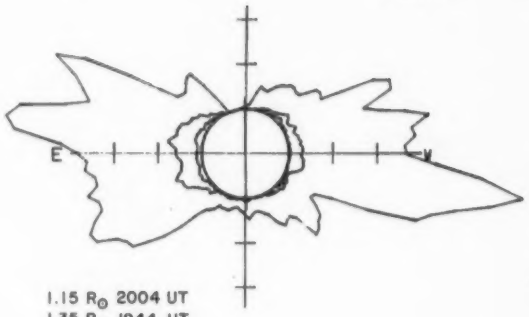
STANFORD



MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

NOVEMBER 22, 1981 (P= 19.35, B_o= 1.98, L_o= 183.92)

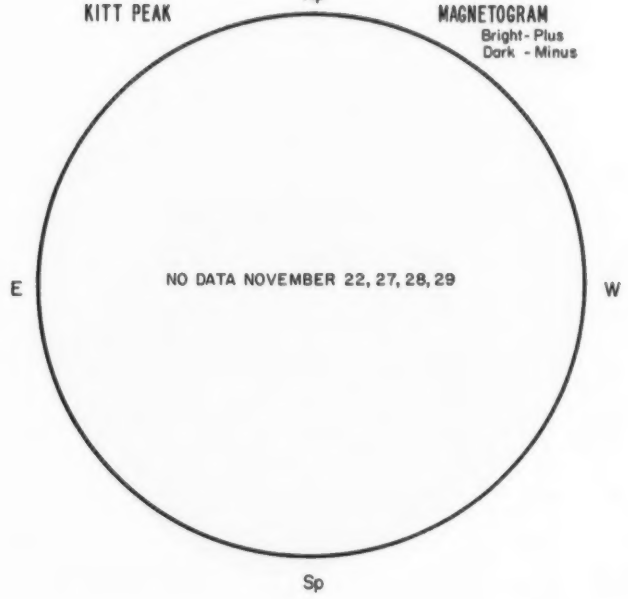
SACRAMENTO PEAK Np CORONA
5303 Å



1.15 $R_\odot$ 2004 UT
1.35 $R_\odot$ 1944 UT
1.55 $R_\odot$ 1953 UT

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



Np

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

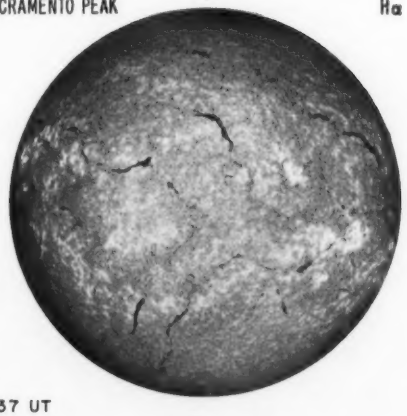
E NO DATA W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

22

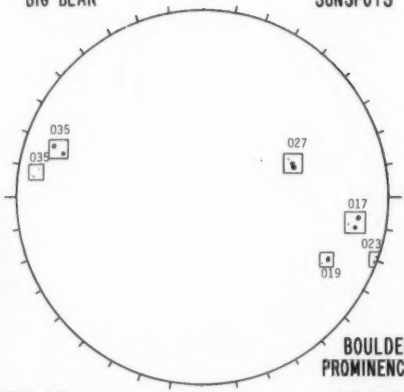
SACRAMENTO PEAK Np Hα



E W

1437 UT Sp

BIG BEAR Np SUNSPOTS



E W E

2035 UT Sp

BIG BEAR Np ACTIVE REGIONS

NO DATA NOVEMBER 22, 27, 28, 29, 30 W

BOULDER PROMINENCES

NO DATA

Sp

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

E NO DATA W

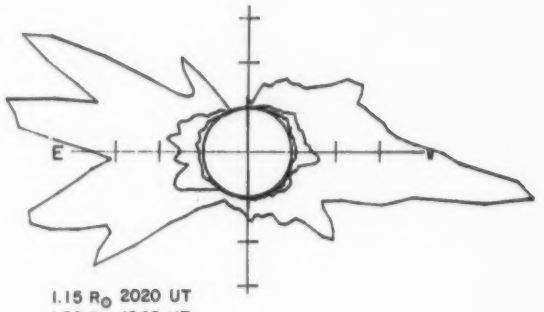
Levels
0 μT
± 50
±100
±200
•
••
•

Sp

93
Nov 81

NOVEMBER 23, 1981 (P= 19.02, B_o= 1.86, L_o= 170.74)

SACRAMENTO PEAK Np CORONA
5303 Å



1.15 $R_\odot$ 2020 UT
1.35 $R_\odot$ 1945 UT
1.55 $R_\odot$ 2009 UT

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright-Plus
Dark - Minus

1742 UT

Sp

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Levels
± 5
± ± 10
± 20
± ± 40
± ± 80

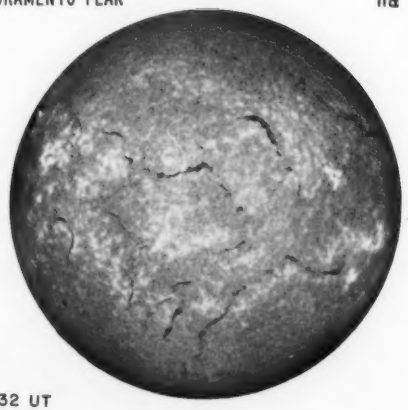
Sp

23

SACRAMENTO PEAK

Np

Hα



E W

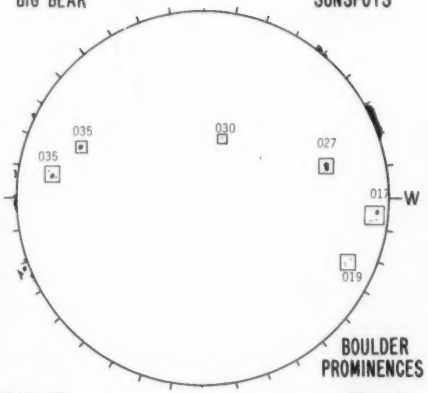
2032 UT

Sp

BIG BEAR

Np

SUNSPOTS



E W

2018 UT

Sp

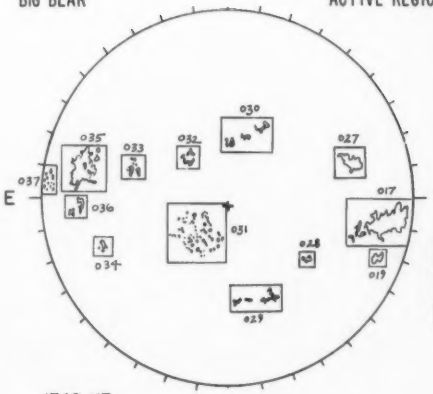
BOULDER PROMINENCES

1558 UT

BIG BEAR

Np

ACTIVE REGIONS



E W

FAIR | MM

17- 5500-3.0
19- 0500-2.5
27- 1100-3.5
35- 3000-3.0

1742 UT

Sp

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

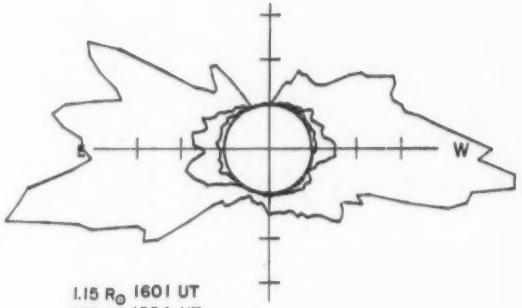
Sp

95

Nov 81

NOVEMBER 24, 1981 (P= 18.69, B_o= 1.74, L_o= 157.56)

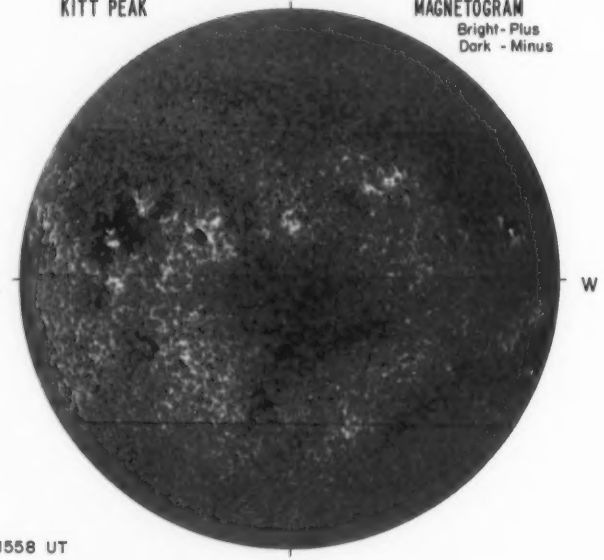
SACRAMENTO PEAK Np CORONA
5303 Å



1.15 $R_\odot$ 1601 UT
1.35 $R_\odot$ 1524 UT
1.55 $R_\odot$ 1550 UT

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

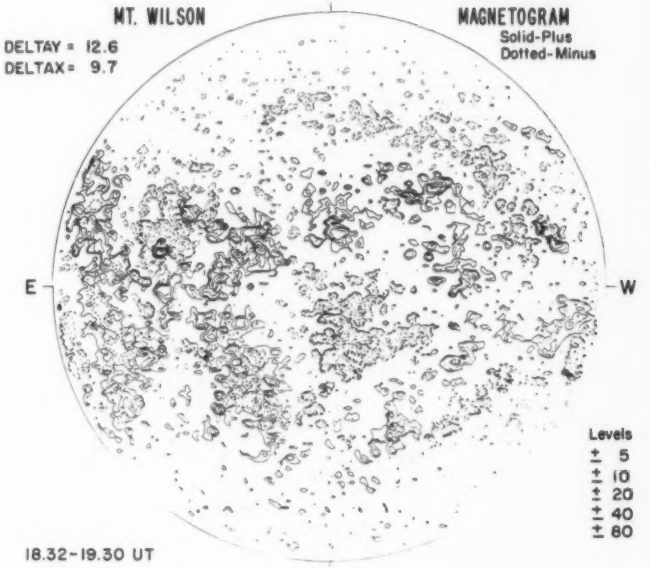


1558 UT

Sp

MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX = 9.7

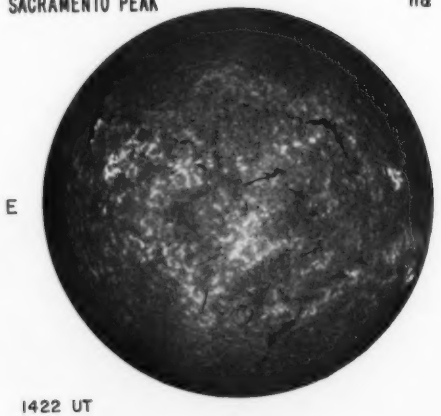


18.32-19.30 UT

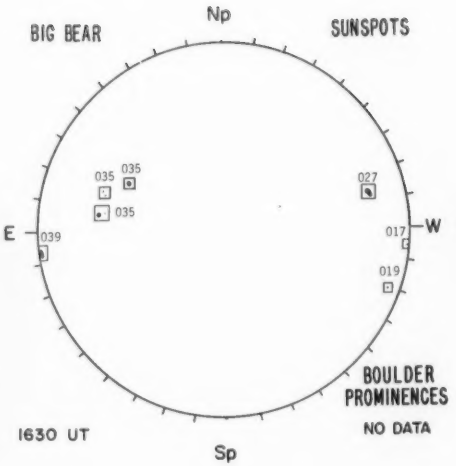
Sp

24

SACRAMENTO PEAK



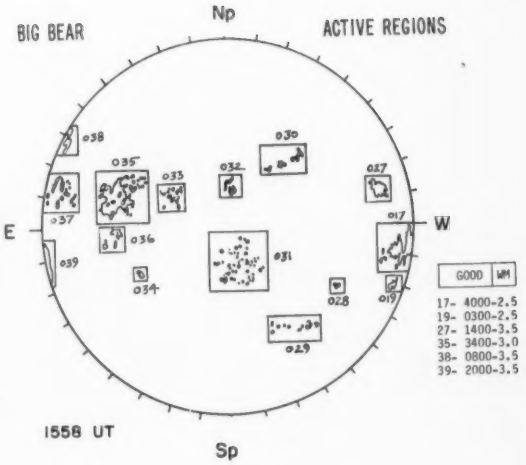
1422 UT



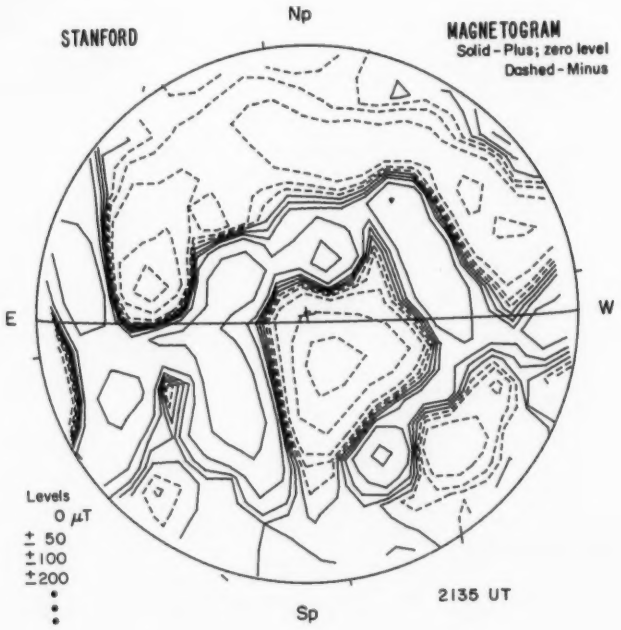
1630 UT

BOULDER PROMINENCES

NO DATA



1558 UT



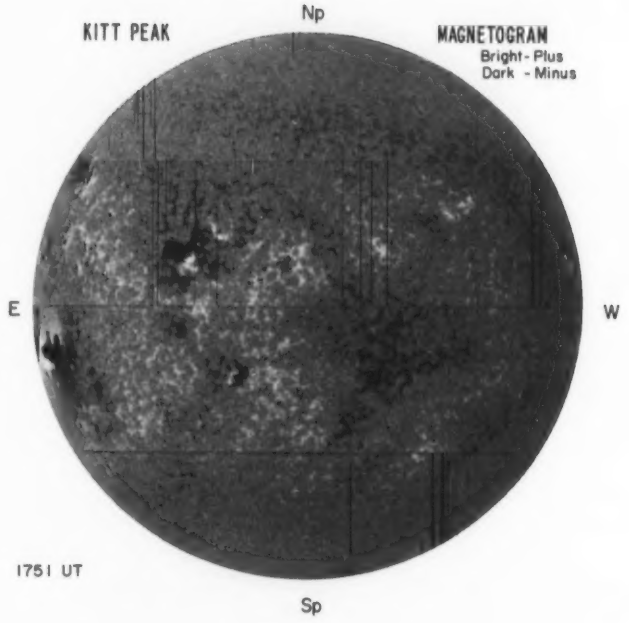
2135 UT

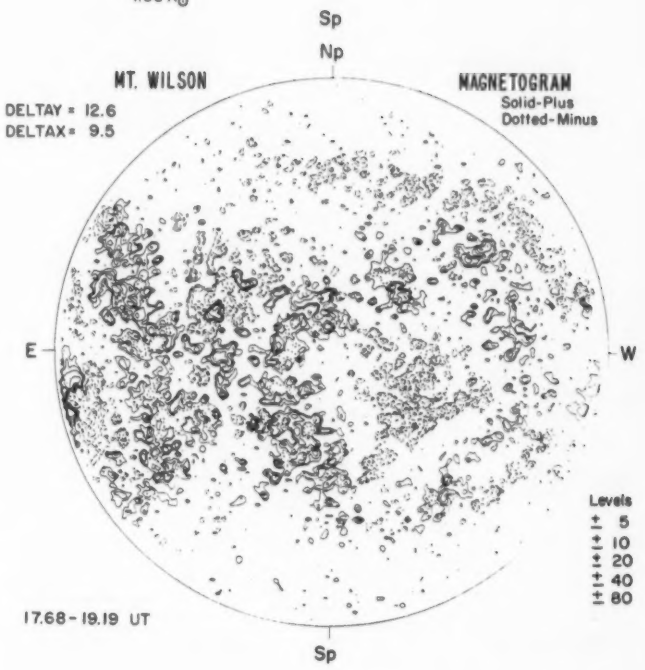
NOVEMBER 25, 1981 (P= 18.34, B_o= 1.61, L_o= 144.38)

SACRAMENTO PEAK Np CORONA
5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$





25

SACRAMENTO PEAK

Np

Hα

E W

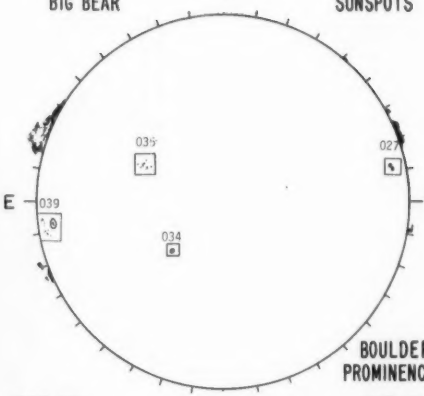
1437 UT

Sp

BIG BEAR

Np

SUNSPOTS



E W

1935 UT

Sp

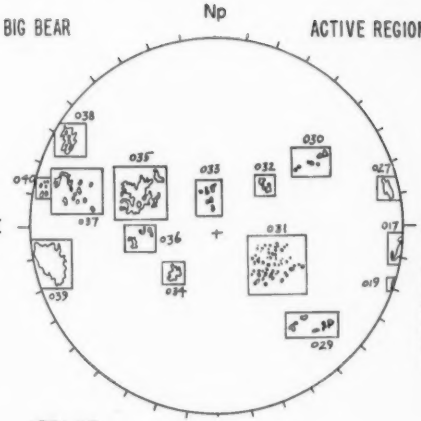
BOULDER PROMINENCES

1617 UT

BIG BEAR

Np

ACTIVE REGIONS



E W

V POOR | WM

27- 1500-3.5
34- 0500-3.5
35- 3000-3.0
38- 1700-2.5
39- 7000-3.5

1751 UT

Sp

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

•

•

•

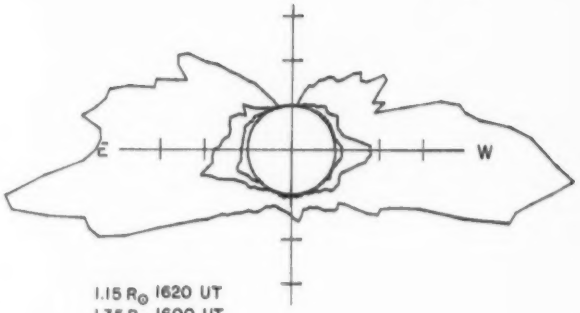
Sp

Nov 81

99

NOVEMBER 26, 1981 (P= 17.99, B_o= 1.49, L_o= 131.20)

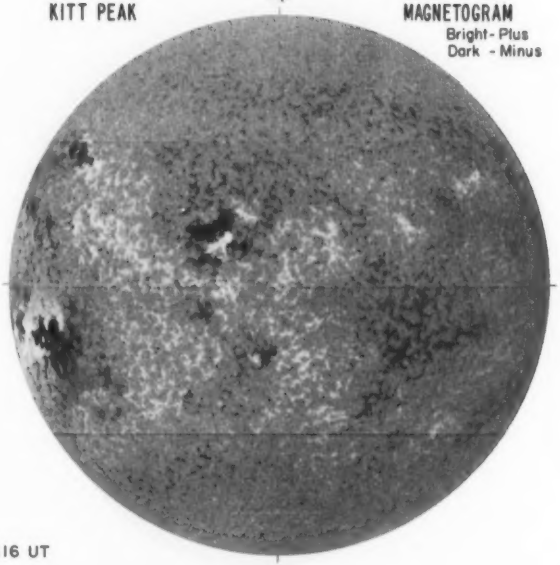
SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 1620 UT
1.35 $R_\odot$ 1600 UT
1.55 $R_\odot$ 1609 UT

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1516 UT

Sp

Np

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

26

Np

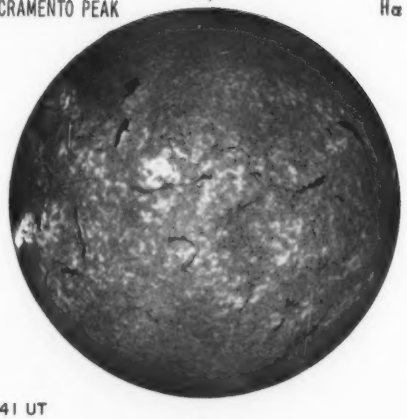
Np

ACTIVE REGIONS

SACRAMENTO PEAK

Np

Hα



E W

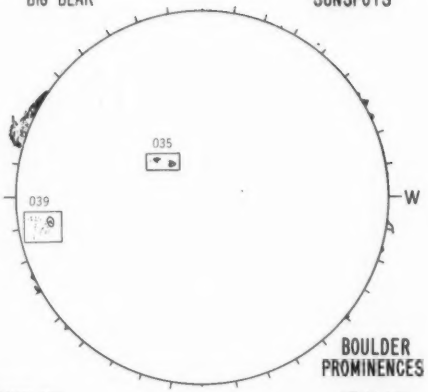
1441 UT

Sp

BIG BEAR

Np

SUNSPOTS



E W

1730 UT

Sp

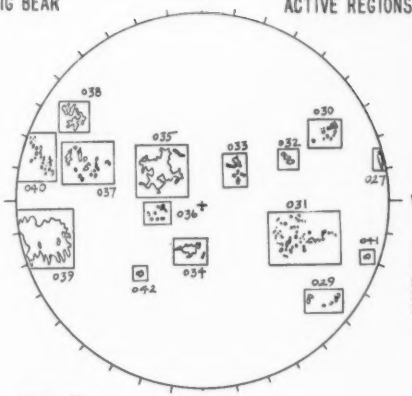
BOULDER PROMINENCES

1515 UT

BIG BEAR

Np

ACTIVE REGIONS



E W

1516 UT

Sp

FAIR	WM

27- 1000-3.0
35- 3000-3.5
39- 9000-4.0

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

•

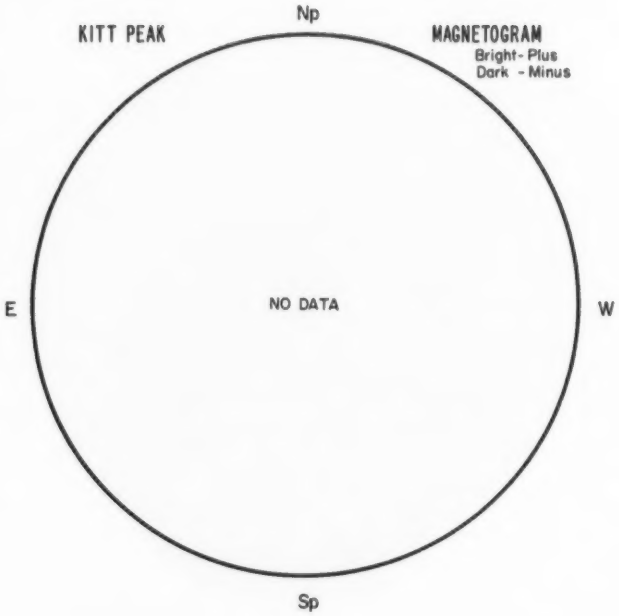
•

•

Sp

NOVEMBER 27, 1981 (P= 17.64, B_o= 1.36, L_o= 118.02)

KITT PEAK



MAGNETOGRAM
Bright- Plus
Dark - Minus

SACRAMENTO PEAK

Np

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

CORONA
5303 Å

MT. WILSON

Np

DELTAY =
DELTAX =

E NO DATA W

Sp

MAGNETOGRAM
Solid-Plus
Dotted-Minus

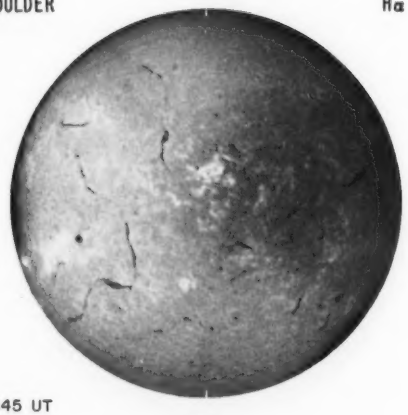
Levels
± 5
± ± 10
± ± 20
± ± ± 40
± ± 80

27

27

BOULDER

Np



E W

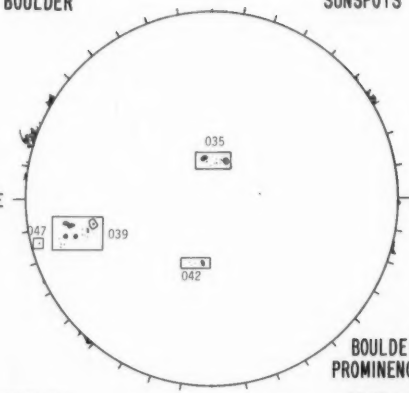
Sp

1545 UT

Hα

BOULDER

Np



E W E

Sp

1520 UT

SUNSPOTS

BOULDER PROMINENCES

1545 UT

BIG BEAR

Np

NO DATA

E W

Sp

ACTIVE REGIONS

STANFORD

Np

NO DATA

E W

Sp

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

Levels

0 μT

± 50

±100

±200

103
Nov 81

NOVEMBER 28, 1981 (P=17.27, B_o= 1.24, L_o= 104.84)

SACRAMENTO PEAK Np CORONA 5303 Å

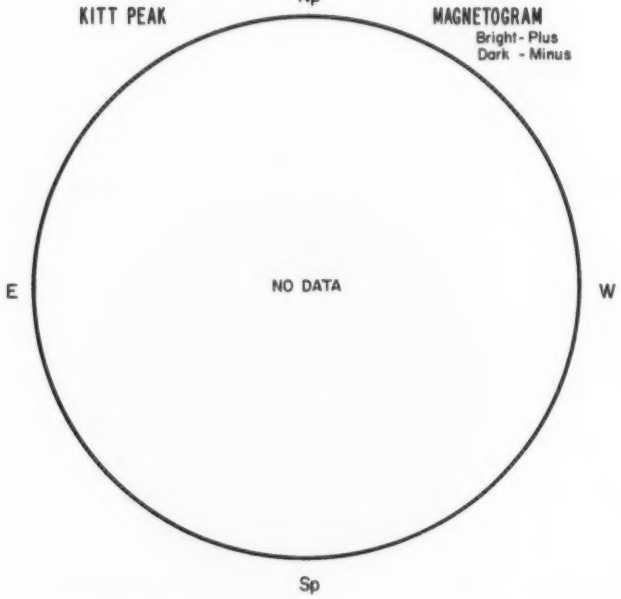
E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK Np MAGNETOGRAM Bright - Plus Dark - Minus



MT. WILSON

DELTAY =
DELTAX =

E NO DATA W

Sp

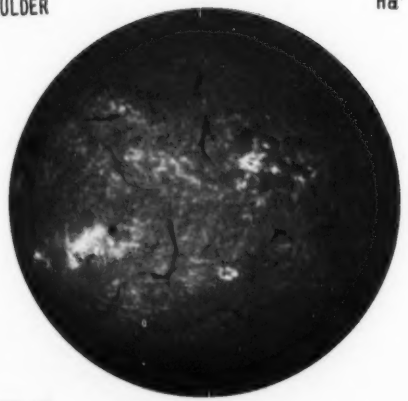
MAGNETOGRAM Solid-Plus Dotted-Minus

Levels
± 5
± 10
± 20
± 40
± 80

28

28

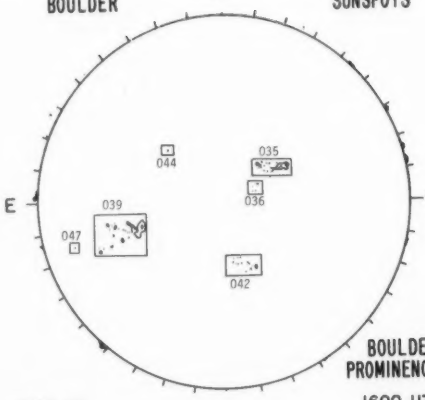
BOULDER Np Hα



E W

1600 UT Sp

BOULDER Np SUNSPOTS BIG BEAR



E W E

1600 UT Sp

BOULDER PROMINENCES

1600 UT

Np ACTIVE REGIONS

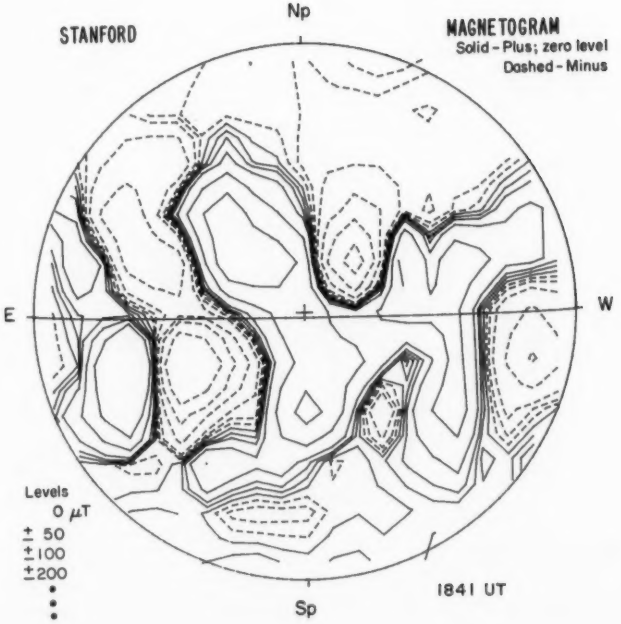
NO DATA W

Sp

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

1841 UT

Sp

NOVEMBER 29, 1981 (P= 16.90, B_o = 1.11, L_o = 91.66)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

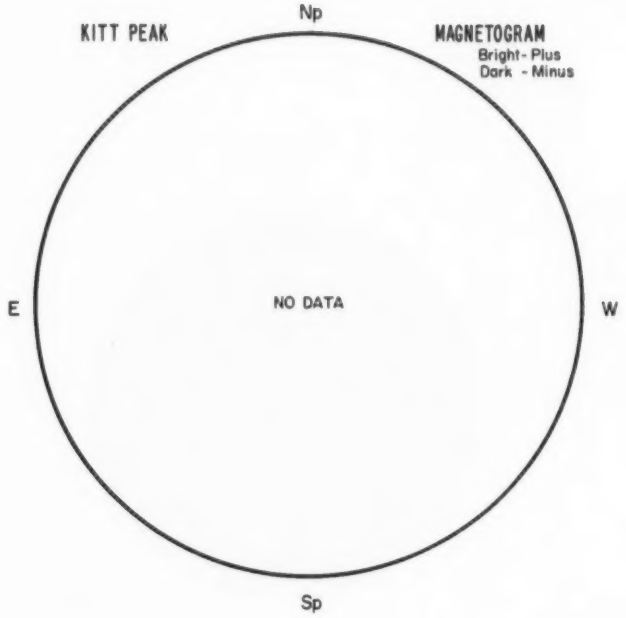
Np

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus

MT. WILSON

DELTAY =
DELTAX =

MAGNETOGRAM
Solid - Plus
Dotted - Minus



E NO DATA W

Levels
± 5
± 10
± 20
± 40
± 80

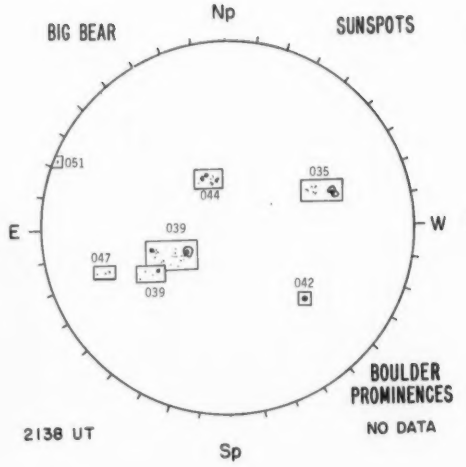
Sp

29

SACRAMENTO PEAK

NO DATA

BIG BEAR



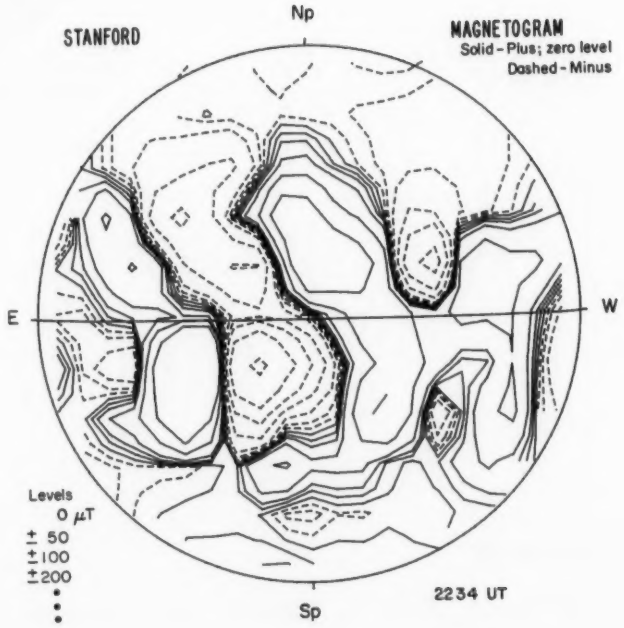
2138 UT

NO DATA

Sp

BIG BEAR

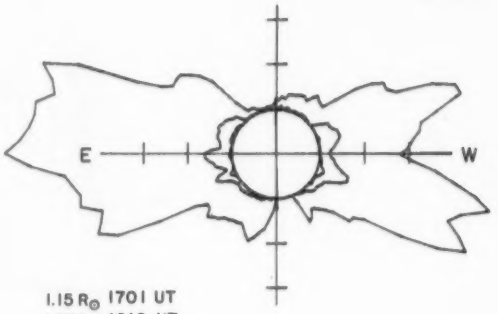
STANFORD



2234 UT

NOVEMBER 30, 1981 (P= 16.53, B_o = 0.98, L_o = 78.48)

SACRAMENTO PEAK Np CORONA
5303 Å

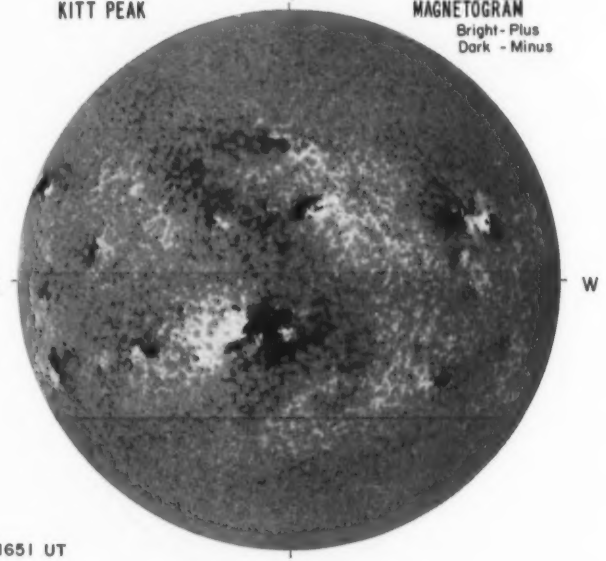


1.15 $R_\odot$ 1701 UT
1.35 $R_\odot$ 1612 UT
1.55 $R_\odot$ 1650 UT

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1651 UT

Sp

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Levels
± 5
± ± 10
± ± ± 20
± ± ± ± 40
± ± ± ± ± 80

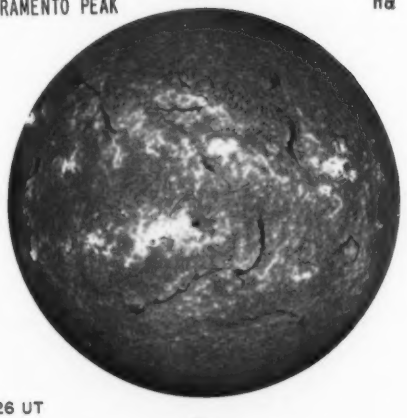
Sp

30

SACRAMENTO PEAK

Np

Hα



E W

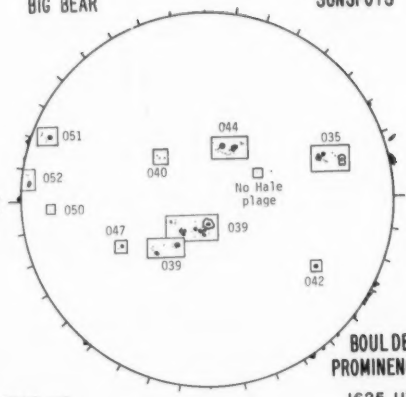
1526 UT

Sp

BIG BEAR

Np

SUNSPOTS



E W E

1900 UT

Sp

BIG BEAR

Np

ACTIVE REGIONS

NO DATA

E W

Sp

BOULDER PROMINENCES

1625 UT

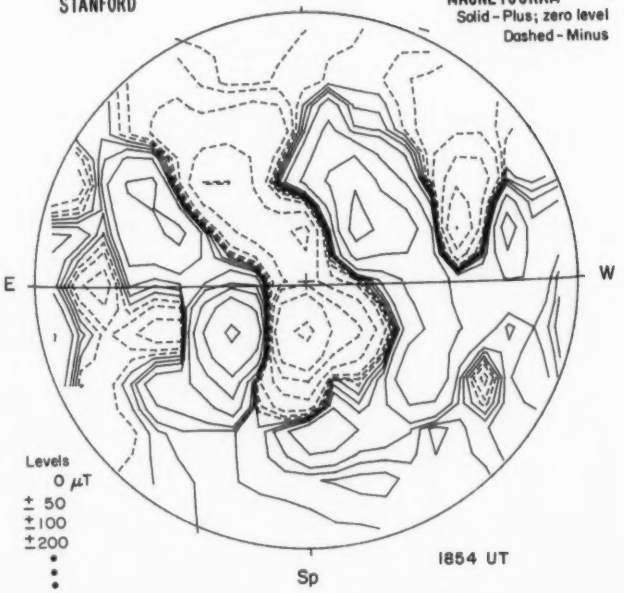
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



Sp

1854 UT

REGIONS OF SOLAR ACTIVITY

NOVEMBER 1981

HALE REGION 17994 CMP DATE 1.1

				CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	6	17994	S24 W73	99	300	2.5									

HALE REGION 17978 CMP DATE 1.3

				CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	1	17978	S03 W05	97	300	3.5	22739	S03 W04	96	(B)	3				
81	11	2	17978	S03 W18	96	300	2.5	22739	S03 W13	92	(B)	3				
81	11	3	17978	S03 W33	98	300	3.0	22739	S03 W34	100	(B)	3	H	20	4	CRO
81	11	4	17978	S03 W47	99	300	2.0	22739	S02 W48	100	(B)	4	H	30	2	CRO
81	11	5	17978	S03 W61	100	400	1.5		S03 W57				B	20	6	CSO
81	11	6	17978	S03 W75	101	500	1.5		S03 W79				H	10	4	BXO

HALE REGION 17986 CMP DATE 1.4

				CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	2	17986	N24 W17	95	100	1.0	22747	N24 W15	94	(AF)	2				

HALE REGION 17979 CMP DATE 1.9

				CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	1	17979	S12 E02	90	300	1.0	22740	S12 E03	89	(X)	1				
81	11	2	17979	S12 W11	89	300	1.0									
81	11	3	17979	S11 W25	90	400	2.5	22755	S11 W23	89	(B)	3	H	10	4	BXO
81	11	3	17979	S11 W25	90	400	2.5	22756	S08 W15	81	(AP)	2	H	10	4	BXO
81	11	4	17979	S12 W38	90	300	1.5	22755	S11 W38	90	(B)	3	H	10	1	AXX
81	11	5	17979	S12 W51	90	400	1.5		S10 W46				M	10	2	BXO
81	11	6	17979	S12 W64	90	400	1.5									
81	11	7	17979	S12 W78	89	300	2.0									

HALE REGION 17961 CMP DATE 1.9

				CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	29	17961	S12 E41	90	200	1.5		S12 E43				H	10	1	AXX
81	10	30	17961	S12 E30	89	100	1.0		S12 E38				L		1	AXX

HALE REGION 17971 CMP DATE 2.3

				CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	30	17971	N18 E35	84	200	1.5		N18 E38				H	180	9	DSO
81	10	31	17971	N18 E22	84	100	1.0		N16 E26				H	150	10	DKO

REGIONS OF SOLAR ACTIVITY

NOVEMBER 1981

HALE REGION 17962 CMP DATE 2.5

			CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	28	17962						22728	S21	E64	80	X	2	H	20	4	CSO
81	10	29	17962	S23	E50	81	1500	2.5	22728	S21	E49	81	B	3	H	30	5	CAO
81	10	30	17962	S23	E38	81	1500	2.5	22728	S21	E38	80	(B)	2	H	40	5	BXO
81	10	31	17962	S24	E25	81	1500	3.0	22728	S21	E22	83	(B)	3	H	10	4	BXO
81	11	1	17962	S23	E10	82	1500	2.5	22728	S22	E12	80	(B)	3				
81	11	2	17962	S23	W03	81	1500	3.0	22728	S22	W01	80	(B)	4				
81	11	3	17962	S23	W15	80	1700	3.0	22728	S22	W14	80	(B)	3	H	50	11	BXO
81	11	4	17962	S24	W29	81	1400	2.5	22728	S23	W27	79	(B)	4	H	60	6	DAO
81	11	5	17962	S24	W41	80	1400	2.5		S22	W41				B	10	5	CRO
81	11	6	17962	S24	W54	80	1500	3.0		S22	W54				H		2	BXO
81	11	7	17962	S24	W68	79	1500	3.0	22728	S22	W68	81	(AP)	4	H	80	3	CAO
81	11	8	17962	S22	W81	80	500	3.0		S22	W75				L	70	1	HSX

HALE REGION 18001 CMP DATE 2.8

			CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	8	18001	S12	W78	77	300	3.5	22767	S12	W77	76	(X)	2				

HALE REGION 17963 CMP DATE 2.9 NEW, IN LOCATION OF REGION 17887

			CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	27	17963							N17	E81				H	250	3	CHO
81	10	28	17963						22729	N17	E67	77	BP	4	H	160	6	CHO
81	10	29	17963	N17	E55	76	3000	2.5	22729	N16	E53	77	AP	5	H	270	11	CSO
81	10	30	17963	N17	E44	75	3000	2.5	22729	N17	E38	80	(B)	4	H	180	9	DSO
81	10	31	17963	N17	E30	76	2800	3.0	22729	N17	E27	78	(B)	4	H	150	10	DKO
81	11	1	17963	N17	E16	76	2600	3.0	22729	N15	E13	79	(D)	5				
81	11	2	17963	N16	E02	76	2700	3.0	22729	N15	W01	80	(BP)	4	H	170	16	DSO
81	11	3	17963	N16	W12	77	2500	3.0	22729	N15	W13	79	(BP)	4	H	150	9	CSO
81	11	4	17963	N16	W25	77	2400	2.5	22757	N10	W27	79	(AP)	3				
81	11	4	17963	N16	W25	77	2400	2.5	22729	N15	W27	79	(AP)	4	H	140	4	CSO
81	11	5	17963	N16	W38	77	2500	2.5		N16	W40				B	120	2	HSX
81	11	6	17963	N16	W51	77	2200	2.5		N15	W56				H	160	3	HAX
81	11	7	17963	N16	W65	76	2500	2.5	22729	N16	W67	80	(AP)	4	H	90	3	HAX
81	11	8	17963	N16	W78	77	1700	2.5	22729	N15	W80	79	(AP)	2	L	100	2	HSX

HALE REGION 17964 CMP DATE 3.1

			CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	29	17964	N28	E57	74	600	3.5	22732	N29	E58	72	B	3	H	40	3	DSO
81	10	30	17964	N28	E45	74	1200	3.5	22732	N29	E43	75	(B)	3	H	170	6	CSO
81	10	31	17964	N27	E32	74	1500	3.0	22732	N29	E32	73	(B)	4	H	180	7	DAO
81	11	1	17964	N28	E17	75	1600	2.5	22732	N28	E16	76	(B)	5				
81	11	2	17964	N28	E05	73	1400	2.0	22732	N28	E04	75	(B)	5				
81	11	3	17964	N28	W07	72	1300	2.0	22732	N28	W08	74	(B)	5	H	150	9	CRO
81	11	4	17964	N28	W20	72	1300	2.0	22732	N28	W21	73	(B)	5	B	90	9	CAO
81	11	5	17964	N28	W32	71	1400	2.5		N29	W34				B	110	3	CSO
81	11	6	17964	N28	W45	71	1400	2.5		N28	W50				H	180	2	HAX
81	11	7	17964	N29	W58	69	1300	3.0	22732	N28	W61	74	(AP)	4	H	70	1	HAX
81	11	8	17964	N29	W71	70	1500	3.0	22732	N27	W76	75	(AP)	3	L	70	1	HSX
81	11	9	17964	N31	W83	69	400	3.0	22732	N28	W86	72	(AP)	2	H	10	1	AXX

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HALE REGION 17968 CMP DATE 3.7 RETURN OF LEADING PORTION OF 17890 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	28	17968					22730	S07 E79	65	AP	2	H	20	1	HSX
81	10	29	17968	S07 E65	66	1100	3.0	22730	S07 E65	65	AP	4	H	100	1	HSX
81	10	30	17968	S07 E53	66	800	2.5	22730	S07 E52	66	(AP)	3	R	70	1	HAX
81	10	31	17968	S08 E40	66	900	2.0	22730	S07 E40	65	(AP)	4	H	40	1	HAX
81	11	1	17968	S07 E26	66	1000	2.0	22730	S08 E26	66	(BP)	4				
81	11	2	17968	S07 E13	65	600	1.5	22730	S07 E13	66	(AP)	4				
81	11	3	17968	S07 W01	66	500	2.0	22730	S08 W00	66	(AP)	4	H	30	3	CRO
81	11	4	17968	S08 W13	65	300	2.0	22730	S07 W14	66	(AP)	3	B	30	5	CRO
81	11	5	17968	S08 W27	66	300	1.5		S07 W28				B	10	1	HRX
81	11	6	17968	S07 W40	66	300	1.5		S07 W43				H		1	AXX
81	11	7	17968	S07 W55	66	200	2.0		S08 W54				H		1	AXX
81	11	8	17968	S06 W69	68	200	2.0									

HALE REGION 17966 CMP DATE 3.9 NEW, IN LOCATION OF REGION 17889

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	29	17966	N13 E68	63	700	2.0		N17 E72				H		1	AXX
81	10	30	17966	N13 E56	63	900	2.0									
81	10	31	17966	N13 E43	63	1100	2.0									
81	11	1	17966	N13 E28	64	1000	2.0									
81	11	2	17966	N13 E15	63	1400	2.0	22748	N11 E15	64	(BF)	3				
81	11	3	17966	N13 E02	63	1000	2.5	22748	N11 E04	62	(BY)	3	H	30	10	DRO
81	11	4	17966	N13 W12	64	900	2.0	22748	N11 W09	61	(AP)	3	H	20	6	BXO
81	11	5	17966	N13 W25	64	900	2.0		N11 W22				H	10	2	AXX
81	11	6	17966	N13 W37	63	1200	2.5		N11 W38				H	10	4	AXO
81	11	7	17966	N13 W51	62	800	2.5									
81	11	8	17966	N13 W64	63	600	2.5									
81	11	9	17966	N13 W77	63	800	1.5									

HALE REGION 17972 CMP DATE 4.0

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	30	17972	S14 E58	61	200	1.5		S17 E52				H	70	1	HSX
81	10	31	17972	S14 E45	61	300	3.0									
81	11	1	17972	S14 E31	61	300	2.5									
81	11	2	17972	S14 E18	60	300	2.5									
81	11	3	17972	S14 E04	61	400	2.5									
81	11	4	17972	S15 W09	61	300	2.0									
81	11	5	17972	S15 W22	61	300	2.0		S12 W21				R	10	3	BXO
81	11	6	17972	S15 W35	61	400	2.0									
81	11	7	17972	S15 W50	61	300	3.0									
81	11	8	17972	S15 W64	63	300	2.0									
81	11	9	17972	S14 W79	65	300	2.5		S10 W71				P	300	20	EAI

HALE REGION 17995 CMP DATE 4.0

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	6	17995	S33 W35	61	100	2.0									
81	11	7	17995	S33 W48	59	100	2.0									

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HALE REGION 17967 CMP DATE 4.3 RETURN OF SOUTHERN PORTION OF 17889 ROTATION 3

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	29	17967	N05 E73	58	100	1.5									
81	10	30	17967	N05 E62	57	100	1.5									
81	10	31	17967	N04 E48	58	100	1.0									
81	11	1	17967	N04 E34	58	200	1.5									
81	11	2	17967	N04 E21	57	100	1.0									
81	11	3	17967	N04 E07	58	200	1.5									
81	11	4	17967	N05 W05	57	100	1.0		N06 W12				R	20	5	CAO

HALE REGION 17965 CMP DATE 4.8 RETURN OF N.E. PORTION OF 17889 ROTATION 3

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	29	17965	N18 E75	56	1200	2.5		N17 E72				H		1	AXX
81	10	30	17965	N18 E65	54	2700	2.0									
81	10	31	17965	N17 E53	53	2500	2.5									
81	11	1	17965	N17 E40	52	2100	2.0	22741	N16 E33	59	(AF)	2				
81	11	2	17965	N17 E27	51	1700	2.5	22741	N17 E20	59	(AP)	2				
81	11	3	17965	N17 E14	51	1800	2.0	22741	N17 E08	58	(B)	3	H	20	3	BXO
81	11	4	17965	N17 E02	50	1500	2.0	22741	N19 W04	56	(AF)	2				
81	11	5	17965	N17 W12	51	1500	2.0		N12 W12				B		1	AXX
81	11	6	17965	N17 W25	51	1500	2.0									
81	11	7	17965	N17 W38	49	1500	2.0									
81	11	8	17965	N18 W51	50	1700	2.0									
81	11	9	17965	N18 W64	50	1200	1.5									

HALE REGION 17969 CMP DATE 4.9 NEW, IN LOCATION OF TRAILING 17890

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	29	17969	S10 E78	53	3500	4.0	22733	S10 E80	50	X	4	H	400	4	DKC
81	10	30	17969	S10 E68	51	5000	4.0	22733	S10 E69	49	(B)	4	H	850	14	EKI
81	10	31	17969	S11 E56	50	7200	4.0	22733	S10 E54	51	(BY)	4	H	850	36	FKI
81	11	1	17969	S11 E43	49	7000	4.0	22733	S11 E40	52	(D)	5				
81	11	2	17969	S11 E30	48	7300	4.0	22733	S11 E29	50	(D)	5				
81	11	3	17969	S11 E16	49	7000	3.5	22733	S11 E15	51	(D)	5	H	1460	68	FKI
81	11	4	17969	S12 E03	49	8000	4.0	22733	S11 E01	51	(D)	5	H	2080	75	FKI
81	11	5	17969	S12 W11	50	8100	4.0		S09 W12				B	980	49	FKI
81	11	6	17969	S12 W24	50	8300	4.0		S11 W29				H	1910	17	FKI
81	11	7	17969	S12 W38	49	9000	3.5	22733	S10 W41	54	(BY)	5	H	530	36	FAI
81	11	8	17969	S13 W52	51	9500	3.5	22733	S10 W55	54	(BY)	4				
81	11	9	17969	S12 W65	51	8800	3.5	22733	S10 W68	54	(B)	4	H	280	16	EAI
81	11	10	17969	S11 W78	51	7500	4.0	22733	S09 W82	55	(B)	2	H	160	7	EAI
81	11	11	17969	S12 W90	50	1500	4.0									

HALE REGION 17980 CMP DATE 5.8 NEW, IN LOCATION OF REGION 17893

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	1	17980	N14 E54	38	400	1.5	22743	N13 E55	37	(AP)	3				
81	11	2	17980	N14 E42	36	700	3.5	22743	N13 E41	38	(B)	4				
81	11	3	17980	N14 E28	37	1000	3.0	22743	N13 E28	38	(B)	4	H	80	8	CAO
81	11	4	17980	N14 E15	37	700	2.5	22743	N13 E15	37	(B)	4	H	90	9	DAO
81	11	5	17980	N14 E02	37	600	2.5		N12 E02				H	70	7	DSO
81	11	6	17980	N14 W11	37	600	2.0		N13 W13				H	30	6	CSO
81	11	7	17980	N14 W26	37	600	2.0	22743	N14 W26	39	(AP)	3	H	10	2	AXX
81	11	8	17980	N14 W40	39	900	2.5									
81	11	9	17980	N14 W53	39	700	2.5									
81	11	10	17980	N13 W66	39	500	1.5									

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HALE REGION 17982 CMP DATE 6.5 RETURN OF REGION 17892 ROTATION 4

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	1	17982	S13 E63	29	500	2.0									
81	11	2	17982	S14 E50	28	1100	1.5									
81	11	3	17982	S14 E37	28	700	1.0									
81	11	4	17982	S14 E24	28	700	1.0									
81	11	5	17982	S14 E11	28	700	1.0									
81	11	6	17982	S13 W02	28	600	1.0									
81	11	7	17982	S13 W16	27	600	1.0									
81	11	8	17982	S13 W29	28	600	1.0									
81	11	9	17982	S13 W42	28	500	1.0									
81	11	10	17982	S14 W55	28	500	1.0									
81	11	11	17982	S14 W67	27	400	1.0									
81	11	12	17982	S14 W80	27	200	1.0									

HALE REGION 17977 CMP DATE 7.0

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	31	17977	N19 E75	31	600	2.0		N19 E74				H	10	1	HRX
81	11	1	17977	N21 E66	26	700	3.0	22742	N19 E60	32	(AP)	4				
81	11	2	17977	N21 E54	24	700	2.0	22742	N19 E47	32	(AP)	4				
81	11	2	17977	N21 E54	24	700	2.0	22749	N18 E56	23	(X)	1				
81	11	3	17977	N21 E41	24	600	2.5	22742	N19 E34	32	(AP)	4	H	20	2	CRO
81	11	4	17977	N21 E28	24	1000	2.0	22742	N19 E21	31	(AP)	4	H	20	1	HRX
81	11	5	17977	N22 E15	24	800	2.0		N19 E08				B	10	1	HSX
81	11	6	17977	N22 E04	22	800	2.0		N20 E03				M	20	1	HRX
81	11	7	17977	N22 W10	21	600	1.5	22742	N19 W18	31	(AP)	3	H	10	1	AXX
81	11	8	17977	N23 W24	23	1000	1.5	22742	N20 W32	31	(AP)	1	L		1	AXX
81	11	9	17977	N23 W37	23	800	2.0									
81	11	10	17977	N23 W50	23	600	2.0									
81	11	11	17977	N23 W63	23	700	2.0									
81	11	12	17977	N23 W75	22	500	1.5									

HALE REGION 17981 CMP DATE 7.5

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	1	17981	N05 E78	14	300	3.0	22744	N04 E79	13	(AP)	2				
81	11	2	17981	N05 E66	12	200	1.0	22744	N04 E64	15	(AP)	2				
81	11	3	17981	N05 E52	13	300	2.0	22744	N03 E50	16	(AP)	3	H	10	1	AXX
81	11	4	17981	N04 E38	14	700	2.5	22744	N03 E37	15	(B)	2	H	20	5	BXO
81	11	5	17981	N04 E24	15	700	2.5		N03 E23				H	40	10	CSO
81	11	6	17981	N04 E10	16	800	2.0		N03 E08				H	10	7	BXO
81	11	7	17981	N04 W04	15	500	2.5	22744	N04 W02	15	(AF)	3	R	40	7	BXO
81	11	8	17981	N04 W18	17	800	2.0									
81	11	9	17981	N04 W31	17	700	2.5									
81	11	10	17981	N04 W44	17	600	2.5									
81	11	11	17981	N05 W57	17	500	2.0									
81	11	12	17981	N05 W70	17	400	2.5									

HALE REGION 17988 CMP DATE 7.7

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	3	17988	S24 E53	12	100	2.0									
81	11	4	17988	S25 E40	12	100	2.0									
81	11	5	17988	S25 E27	12	100	1.0									

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HALE REGION 17984 CMP DATE 8.3 NEW, IN LOCATION OF REGION 17927

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	1	17984	S04 E84	8	200	1.0									
81	11	2	17984	S04 E73	5	800	3.5	22750	S04 E72	7	(AP)	3				
81	11	3	17984	S04 E60	5	1700	2.5	22750	S03 E59	7	(AP)	4	H	150	1	HSX
81	11	4	17984	S05 E47	5	1900	2.5	22750	S04 E46	6	(AP)	5	H	170	1	HSX
81	11	5	17984	S05 E35	4	2000	2.5		S04 E33				H	170	1	HSX
81	11	6	17984	S05 E22	4	1800	2.5		S04 E19				H	120	1	HSX
81	11	7	17984	S05 E07	4	1300	3.0	22750	S04 E07	6	(BP)	5	H	120	2	CSO
81	11	8	17984	S05 W06	5	1500	2.5	22750	S04 W07	6	(BP)	4				
81	11	8	17984	S05 W06	5	1500	2.5	22770	S06 E11	348	(AP)	2	L	120	1	HSX
81	11	9	17984	S05 W18	4	1200	2.5	22750	S05 W19	5	(BP)	5	H	130	1	HSX
81	11	10	17984	S05 W31	4	1400	2.5	22750	S05 W33	6	(BP)	4	H	80	1	HSX
81	11	11	17984	S05 W44	4	1800	2.5	22750	S05 W46	6	(AP)	4	H	110	1	HSX
81	11	12	17984	S05 W57	4	1800	2.5	22750	S04 W59	6	(AP)	4	H	70	1	HAX
81	11	13	17984	S05 W70	3	1300	2.5	22750	S05 W77	7	(AP)	4	H	70	1	HSX

HALE REGION 17987 CMP DATE 8.4

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	2	17987	N04 E77	1	900	3.0	22752	N05 E76	3	(AP)	3				
81	11	3	17987	N04 E64	1	700	2.5	22752	N04 E63	3	(B)	3	H	20	4	CSO
81	11	4	17987	N05 E50	2	700	2.5	22752	N05 E50	2	(B)	3	H	20	4	BXO
81	11	5	17987	N05 E37	2	600	1.5		N04 E36				H	10	3	BXO
81	11	6	17987	N05 E24	2	600	1.0		N03 E21				H	10	3	AXX
81	11	7	17987	N05 E10	1	600	1.5									
81	11	8	17987	N05 W04	3	500	1.0	22768	N04 W05	4	(AP)	3				
81	11	9	17987	N05 W17	3	500	1.0		N04 W10				M		1	AXX
81	11	10	17987	N05 W30	3	500	1.5									
81	11	11	17987	N05 W43	3	300	2.0									
81	11	12	17987	N05 W56	3	200	2.0									
81	11	13	17987	N06 W70	3	200	2.5									

HALE REGION 17983 CMP DATE 8.5 RETURN OF REGION 17905 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	1	17983	S17 E80	12	500	3.0									
81	11	2	17983	S16 E75	3	3500	3.5	22751	S15 E77	2	(AP)	3				
81	11	3	17983	S15 E63	2	3400	3.5	22751	S16 E65	1	(B)	4	H	310	10	DAI
81	11	4	17983	S16 E51	1	4500	4.0	22751	S16 E52		(B)	4	H	450	13	EAO
81	11	5	17983	S16 E38	1	4000	3.5		S17 E35				H	230	17	DAO
81	11	6	17983	S16 E26	0	4400	4.0		S16 E25				H	180	23	DAO
81	11	7	17983	S16 E10	1	4200	3.5	22751	S15 E10	3	(B)	5	H	250	11	EAO
81	11	8	17983	S16 W03	2	4800	3.5	22751	S15 W05	4	(BP)	4				
81	11	9	17983	S17 W15	1	4800	3.5	22751	S16 W17	3	(BP)	4	H	200	6	CKO
81	11	9	17983	S17 W15	1	4800	3.5	22774	S25 W23	9	(AP)	2				
81	11	10	17983	S17 W28	1	5000	3.5	22751	S15 W32	5	(BP)	5	H	190	4	CKO
81	11	11	17983	S17 W41	1	4500	3.5	22751	S15 W45	5	(BP)	4	H	130	4	CAO
81	11	12	17983	S17 W54	1	4300	3.5	22751	S14 W58	5	(AP)	4	H	80	4	CHO
81	11	13	17983	S16 W67	0	4700	3.5	22751	S15 W78	8	(AP)	4	H	100	1	HSX
81	11	14	17983	S16 W80	0	3500	3.5		S14 W88				R	60	1	HSX

HALE REGION 18002 CMP DATE 8.6

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	8	18002	N18 W02	1	100	1.5	22769	N17 W00	359	(X)	1				

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HALE REGION 17990 CMP DATE 9.1

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	4	17990	N09	E58	354	100	2.0	22758	N09	E57	355	(AP)	2	H	20	4	BXO

HALE REGION 18003 CMP DATE 9.9 RETURN OF REGION 17898 ROTATION 3

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	8	18003	N20	E15	344	400	1.5										
81	11	9	18003	N19	E03	343	200	1.5	22775	N18	E02	344	(AP)	2				
81	11	10	18003	N19	W12	345	200	1.0	22775	N18	W12	345	(AP)	3	H		1	AXX
81	11	11	18003	N19	W25	345	200	1.0	22775	N18	W26	346	(AP)	3	H	10	2	AXX
81	11	12	18003	N20	W38	345	300	2.0	22775	N18	W38	345	(AP)	2				
81	11	13	18003	N19	W51	344	200	2.0										
81	11	14	18003	N19	W65	345	100	2.0										

HALE REGION 17989 CMP DATE 10.5 RETURN OF REGION 17906 ROTATION 2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	3	17989	S17	E78	347	600	3.0		S22	E80				R	220	3	DAO
81	11	4	17989	S18	E68	344	4000	3.5	22759	S20	E78	334	(B)	2	H	390	4	DAO
81	11	5	17989	S17	E58	341	4200	3.5		S21	E65				H	500	8	DSI
81	11	6	17989	S17	E47	339	4500	4.0		S20	E53				H	590	10	EAO
81	11	7	17989	S18	E35	336	5200	4.0	22763	S15	E55	318	(AF)	3	H	20	1	HSX
81	11	7	17989	S18	E35	336	5200	4.0	22759	S20	E40	333	(BY)	5	H	490	15	ESO
81	11	8	17989	S17	E24	335	5000	3.5	22759	S20	E26	333	(B)	5	L	600	15	DHI
81	11	9	17989	S18	E11	335	5000	4.0	22759	S20	E13	333	(BY)	5	H	580	20	EHO
81	11	10	17989	S18	W02	335	5500	3.5	22781	S19	W09	342	(B)	3	L		1	AXX
81	11	10	17989	S18	W02	335	5500	3.5	22759	S20	E01	332	(BY)	5	H	540	24	EHO
81	11	11	17989	S17	W12	332	5000	3.5	22781	S18	W21	341	(AP)	2	H	510	32	EHI
81	11	11	17989	S17	W12	332	5000	3.5	22759	S20	W12	332	(D)	5	H	510	32	EHI
81	11	12	17989	S18	W25	332	5400	3.5	22784	S15	W15	322	(AF)	2	H	20	3	BXO
81	11	12	17989	S18	W25	332	5400	3.5	22759	S19	W26	333	(BY)	5	H	500	25	EHI
81	11	13	17989	S17	W38	331	5100	3.5	22784	S15	W30	320	(AP)	3	B	390	11	DHO
81	11	13	17989	S17	W38	331	5100	3.5	22759	S19	W42	332	(BY)	5	H	390	30	EKI
81	11	14	17989	S17	W50	330	5000	3.5		S19	W52				H	470	18	EAI
81	11	15	17989	S16	W63	330	4700	3.5	22759	S19	W63	330	(BP)	4	H	360	11	EAI
81	11	15	17989	S16	W63	330	4700	3.5	22784	S15	W53	320	(AF)	2	L	410	22	EAI
81	11	16	17989	S16	W76	330	4500	3.5	22759	S19	W78	332	(B)	3	H	170	4	DAO

HALE REGION 17991 CMP DATE 11.3 RETURN OF REGION 17909 ROTATION 6

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	5	17991	S07	E71	328	500	2.0										
81	11	6	17991	S07	E60	326	500	1.0										
81	11	7	17991	S06	E48	323	500	1.0										
81	11	8	17991	S06	E34	325	600	1.5	22771	S06	E34	325	(X)	1				
81	11	9	17991	S06	E21	325	600	2.0										
81	11	10	17991	S06	E08	325	400	1.5										
81	11	11	17991	S06	W05	325	300	1.5										
81	11	12	17991	S06	W20	327	300	1.5	22783	S05	W21	328	(B)	2				
81	11	13	17991	S06	W33	326	300	1.0										
81	11	14	17991	S06	W46	326	300	1.0										
81	11	15	17991	S06	W59	326	300	1.0		S03	W54				L	90	13	ESO
81	11	16	17991	S05	W72	326	200	1.0										

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HALE REGION 17992 CMP DATE 11.3 RETURN OF REGION 17899 ROTATION 3

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	5	17992	N17 E74	325	1200	3.0		N16 E77				H	60	1	HSX
81	11	6	17992	N17 E60	326	1400	2.0		N17 E62				H	80	1	HSX
81	11	7	17992	N17 E47	324	1600	2.5	22760	N17 E50	323	(BP)	5	H	60	1	HSX
81	11	8	17992	N17 E34	325	1600	3.0	22760	N18 E37	322	(AP)	4	L	110	2	CSO
81	11	9	17992	N17 E23	323	1500	3.0	22760	N18 E22	324	(BY)	5	H	200	8	DSO
81	11	10	17992	N17 E07	326	2500	3.5	22760	N18 E10	323	(D)	5	H	390	17	DKI
81	11	11	17992	N17 W05	325	3000	4.0	22760	N18 W03	323	(D)	5	H	470	36	DAC
81	11	12	17992	N17 W18	325	3600	4.0	22760	N17 W16	323	(D)	5	H	770	34	EKC
81	11	13	17992	N17 W31	324	4100	3.5	22760	N17 W33	323	(D)	5	H	500	32	EKI
81	11	14	17992	N17 W44	324	4300	3.5		N18 W42				H	550	31	FKI
81	11	15	17992	N17 W57	324	4300	3.5	22760	N18 W54	321	(D)	5	H	460	21	FKI
81	11	16	17992	N17 W70	324	4000	3.5	22760	N18 W69	323	(AP)	3	H	300	14	FKO
81	11	17	17992	N17 W84	325	3000	3.5		N19 W79				H	110	5	EAO

HALE REGION 17997 CMP DATE 11.3

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	6	17997	N03 E65	321	100	2.5									
81	11	7	17997	N03 E50	321	500	2.0	22761	N03 E49	324	(B)	4	H	10	1	AXX
81	11	8	17997	N04 E36	323	600	4.0	22761	N03 E36	323	(B)	4	L	20	5	CRO
81	11	9	17997	N04 E23	323	1400	3.0	22761	N02 E22	324	(B)	4	H	150	18	DAI
81	11	10	17997	N04 E08	325	1500	3.5	22761	N02 E09	324	(B)	4	H	60	21	DAO
81	11	11	17997	N04 W05	325	1600	3.0	22761	N02 W04	324	(B)	4	H	160	23	EAI
81	11	12	17997	N04 W19	326	1800	3.5	22761	N02 W18	325	(B)	4	H	80	16	EAI
81	11	13	17997	N04 W33	326	1900	3.5	22761	N02 W36	326	(B)	4	H	70	20	CAO
81	11	14	17997	N04 W46	326	2000	3.5		N02 W49				H	100	18	DAO
81	11	15	17997	N04 W60	327	2500	3.0	22761	N02 W61	328	(B)	4	H	160	5	ESO
81	11	16	17997	N04 W74	328	2900	3.0	22761	N02 W77	331	(BP)	3	H	120	2	CSO
81	11	17	17997	N04 W87	328	1300	1.5		N03 W80				M	60	1	HSX

HALE REGION 17996 CMP DATE 11.9 RETURN OF REGION 17915 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	6	17996	S20 E70	316	1200	2.0		S18 E66				H	50	4	CAO
81	11	7	17996	S21 E54	317	1600	2.5	22762	S18 E51	322	(AP)	4	H	20	1	HSX
81	11	8	17996	S20 E43	316	2200	3.0	22762	S16 E39	320	(B)	4				
81	11	9	17996	S21 E31	315	2300	2.5	22762	S20 E18	328	(B)	4				
81	11	9	17996	S21 E31	315	2300	2.5	22776	S26 E24	322	(AP)	3				
81	11	10	17996	S20 E16	317	2000	2.0	22762	S19 E12	321	(B)	3	H	10	6	BXO
81	11	11	17996	S20 E03	317	1700	2.5		S19 E05				L	10	2	AXX
81	11	12	17996	S22 W08	315	1200	2.0	22785	S19 W13	320	(B)	3	H	20	3	BXO
81	11	13	17996	S22 W21	314	1000	2.0	22785	S22 W23	313	(B)	2	M	20	3	BXO
81	11	14	17996	S23 W34	314	1100	2.0									
81	11	15	17996	S23 W47	314	1200	2.0	22785	S22 W44	311	(AF)	2				
81	11	16	17996	S23 W60	314	1200	1.5									
81	11	17	17996	S22 W73	314	700	1.0									

HALE REGION 17993 CMP DATE 12.1

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	5	17993	N24 E85	314	300	2.5									
81	11	6	17993	N24 E69	317	300	2.0		N23 E69				H		1	AXX
81	11	7	17993	N24 E56	315	400	2.5	22764	N24 E59	314	(AF)	2	H		1	AXX
81	11	7	17993	N24 E56	315	400	2.5	22766	N22 E58	315	(AF)	3	H		1	AXX
81	11	8	17993	N24 E43	316	500	2.0	22772	N22 E40	319	(X)	1	L	110	2	CSO
81	11	9	17993	N23 E30	316	400	2.0	22777	N23 E33	313	(AF)	2	M	120	5	CSO
81	11	10	17993	N23 E17	316	300	1.0									
81	11	11	17993	N24 E05	315	300	1.0	22782	N27 E04	316	(AF)	3	H		1	AXX
81	11	12	17993	N24 W08	315	500	2.0	22786	N21 W07	314	(BF)	3	H	770	34	EKC
81	11	13	17993	N24 W21	314	500	3.5	22786	N20 W26	316	(B)	3	B	640	21	EKI

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HALE REGION 17993 (CONT) CMP DATE 12.1

			CALCIUM PLAGE DATA							SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	14	17993	N23	W35	315	600	3.0		N18	W42				H	550	31	FKI
81	11	15	17993	N24	W48	315	1500	3.5	22786	N23	W47	314	(B)	4	H	460	21	FKI
81	11	16	17993	N24	W62	316	2800	3.0	22786	N22	W62	316	(BP)	3	H	300	14	FKO
81	11	17	17993	N24	W75	316	3000	3.0		N19	W79				H	110	5	EAO

HALE REGION 17998 CMP DATE 12.1

			CALCIUM PLAGE DATA							SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	6	17998	N18	E75	311	200	2.5		N16	E73				H	10	4	BXO
81	11	7	17998	N18	E59	312	700	3.0	22765	N17	E60	313	(B)	3	H	10	4	BXO
81	11	8	17998	N17	E46	313	1100	2.5	22765	N17	E45	314	(B)	3				
81	11	9	17998	N17	E33	313	1400	2.0	22765	N15	E30	316	(BP)	3	H	20	3	CRO
81	11	10	17998	N17	E18	315	1100	2.5	22765	N17	E20	313	(AF)	3				
81	11	11	17998	N17	E06	314	1000	2.0		N16	E05				H		1	AXX
81	11	12	17998	N17	W07	314	1300	2.5	22787	N15	W05	312	(AF)	2				
81	11	13	17998	N17	W20	313	800	2.0										
81	11	14	17998	N17	W34	314	600	2.0										
81	11	15	17998	N17	W47	314	500	2.5										
81	11	16	17998	N17	W60	314	400	2.0										

HALE REGION 18020 CMP DATE 12.3

			CALCIUM PLAGE DATA							SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	15	18020	N11	W45	312	100	1.0	22794	N11	W43	310	(B)	2	H	30	1	HRX

HALE REGION 18011 CMP DATE 12.4

			CALCIUM PLAGE DATA							SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	11	18011	N02	E09	311	100	1.0										

HALE REGION 18016 CMP DATE 12.4

			CALCIUM PLAGE DATA							SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	12	18016	S13	W04	311	200	1.5		S16	W13				H	20	3	BXO

HALE REGION 18000 CMP DATE 13.0

			CALCIUM PLAGE DATA							SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	7	18000	N15	E75	296	200	2.0										
81	11	8	18000	N14	E61	298	400	2.0										
81	11	9	18000	N14	E46	300	400	2.0	22778	N13	E47	299	(AP)	3	H	10	1	AXX
81	11	10	18000	N14	E32	301	500	2.5	22778	N13	E33	300	(AP)	3	H	10	1	AXX
81	11	11	18000	N14	E18	302	300	2.0										
81	11	12	18000	N14	E04	303	500	3.5	22788	N14	E02	305	(B)	5	H	40	7	CRO
81	11	13	18000	N14	W10	303	900	2.5	22788	N13	W16	306	(BP)	4	H	30	6	CSO
81	11	14	18000	N14	W25	305	900	2.5		N13	W28				H	50	2	HSX
81	11	15	18000	N14	W39	306	500	2.0	22788	N14	W41	308	(AP)	4	H	30	1	HRX
81	11	16	18000	N15	W53	307	300	1.0	22788	N14	W55	309	(AP)	3	H	10	1	AXX
81	11	17	18000	N15	W66	307	300	1.5										

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HALE REGION 17999 CMP DATE 13.1 RETURN OF PART OF REGION 17916 ROTATION 6

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	7	17999	S20 E70	301	300	2.0									

HALE REGION 18021 CMP DATE 13.1

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	15	18021	S14 W34	301	300	3.5	22795	S16 W32	299	(B)	3	H	10	4	BXO
81	11	16	18021	S14 W47	301	1100	3.0	22795	S15 W47	301	(B)	4	H	60	9	CRO
81	11	17	18021	S15 W60	301	2700	3.5		S15 W60				H	180	10	DAO
81	11	18	18021	S15 W74	300	2400	3.0	22795	S16 W73	301	(B)	3	H	160	5	EHO
81	11	19	18021					22795	S16 W83	297	(AF)	2	H	50	1	HSX

HALE REGION 18012 CMP DATE 13.5

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	11	18012	N12 E25	295	200	2.0									
81	11	12	18012	N12 E12	295	500	2.5	22789	N13 E12	295	(B)	4	H	20	5	BXO
81	11	13	18012	N12 W02	295	500	2.5	22789	N12 W07	297	(AP)	3	H		2	BXO
81	11	14	18012	N13 W16	296	600	2.5		N12 W16				H	20	8	BXO
81	11	15	18012	N13 W29	296	800	2.5	22789	N12 W30	297	(AP)	3	H	20	3	BXO
81	11	16	18012	N13 W42	296	1600	3.0	22789	N12 W43	297	(BP)	3	H	30	10	BXO
81	11	17	18012	N13 W56	297	2000	3.5		N13 W56				H	10	5	BXO
81	11	18	18012	N13 W70	296	1700	3.0									
81	11	19	18012	N13 W83	297	200	3.5									

HALE REGION 18009 CMP DATE 13.8 RETURN OF TRAILING PORTION OF 17916 ROTATION 6

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	10	18009	S10 E38	295	400	2.0									
81	11	11	18009	S12 E26	294	500	2.0									
81	11	12	18009	S13 E14	293	400	2.5									
81	11	13	18009	S13 E02	291	300	2.0									
81	11	14	18009	S13 W11	291	400	2.0									
81	11	15	18009	S13 W23	290	300	2.0									
81	11	16	18009	S12 W37	291	200	1.5									
81	11	17	18009	S13 W50	291	100	1.5									
81	11	18	18009	S13 W64	290	100	1.5									
81	11	19	18009	S10 W76	290	100	1.5									

HALE REGION 18007 CMP DATE 14.2 RETURN OF S.E. PORTION OF 17916 ROTATION 6

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	9	18007	S18 E53	293	400	1.5									
81	11	10	18007	S18 E40	293	500	1.5									
81	11	11	18007	S22 E30	290	700	1.5									
81	11	12	18007	S22 E20	287	500	1.5									
81	11	13	18007	S22 E07	286	300	1.0									
81	11	14	18007	S23 W09	289	400	1.5									
81	11	15	18007	S23 W18	285	200	1.5									
81	11	16	18007	S23 W31	285	200	1.5		S18 W28				P	10	1	HRX

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HALE REGION 18004 CMP DATE 14.9 RETURN OF REGION 17923 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	8	18004	S12 E78	281	3000	3.0									
81	11	9	18004	S14 E68	278	4000	2.5	22779	S10 E71	275	(AP)	3	H	40	5	CRO
81	11	9	18004	S14 E68	278	4000	2.5	22780	S14 E72	274	(B)	2	H	40	5	CRO
81	11	10	18004	S14 E56	277	5000	2.5	22779	S10 E58	275	(AP)	4	H	20	7	BXO
81	11	10	18004	S14 E56	277	5000	2.5	22780	S14 E59	274	(B)	3	H	20	7	BXO
81	11	11	18004	S13 E43	277	5000	3.0	22780	S12 E44	276	(B)	3	H	60	17	BXI
81	11	11	18004	S13 E43	277	5000	3.0	22779	S10 E46	274	(AP)	3	H	60	17	BXI
81	11	12	18004	S14 E30	277	5300	2.5	22790	S17 E41	266	(AF)	3	H	60	13	BXO
81	11	12	18004	S14 E30	277	5300	2.5	22780	S13 E29	278	(B)	4	H	60	13	BXO
81	11	12	18004	S14 E30	277	5300	2.5	22779	S10 E31	276	(AP)	3	H	60	13	BXO
81	11	13	18004	S13 E17	276	4900	2.5	22792	S13 E17	273	(B)	3	H	10	6	BXO
81	11	13	18004	S13 E17	276	4900	2.5	22780	S12 E09	281	(B)	3	H	10	6	BXO
81	11	14	18004	S14 E03	277	5000	2.5		S13 E05				R	20	7	BXO
81	11	15	18004	S14 W10	277	4900	2.5	22792	S13 W05	272	(B)	3	H	10	3	BXO
81	11	16	18004	S14 W22	276	4500	3.0	22792	S11 W26	280	(B)	3	H	20	8	BXO
81	11	17	18004	S14 W36	277	4800	2.5		S12 W29				M	20	2	CRO
81	11	18	18004	S14 W50	276	5200	2.5									
81	11	19	18004	S14 W64	278	5300	2.5									
81	11	20	18004	S14 W77	278	4000	2.5									

HALE REGION 18005 CMP DATE 14.9 RETURN OF REGION 17922 ROTATION 3

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	8	18005	N12 E85	274	500	2.5		N17 E86				L	100	1	HHX
81	11	9	18005	N11 E70	276	2500	1.5									
81	11	10	18005	N11 E58	275	1700	1.5									
81	11	11	18005	N11 E43	277	1100	1.5									
81	11	12	18005	N10 E30	277	1000	2.0									
81	11	13	18005	N11 E16	277	900	2.0									
81	11	14	18005	N11 E03	277	800	2.0									
81	11	15	18005	N11 W09	276	800	1.5		N12 W12				R	10	5	BXO
81	11	16	18005	N12 W22	276	700	1.5									
81	11	17	18005	N11 W36	277	800	1.5									
81	11	18	18005	N11 W49	275	600	1.5									
81	11	19	18005	N10 W63	277	400	1.0									
81	11	20	18005	N09 W76	277	200	1.0									

HALE REGION 18006 CMP DATE 14.9 NEW, IN LOCATION OF REGION 17921 ROTATION 3 AND 5

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	8	18006	N18 E85	274	1000	3.0	22773	N18 E79	280	(AP)	4	L	100	1	HHX
81	11	9	18006	N18 E68	278	3300	3.0	22773	N18 E65	281	(AP)	5	H	250	1	HSX
81	11	10	18006	N18 E55	278	3200	3.5	22773	N17 E51	282	(AP)	5	H	250	1	HHX
81	11	11	18006	N18 E41	279	3200	3.0	22773	N18 E39	281	(BP)	5	H	240	2	HHX
81	11	12	18006	N18 E29	278	3100	3.5	22773	N17 E26	281	(BY)	5	H	270	7	CHO
81	11	13	18006	N18 E16	277	2800	3.0	22773	N18 E09	281	(BP)	5	H	250	5	CHO
81	11	14	18006	N17 E02	278	2800	3.5		N18 E02				R	330	22	CAO
81	11	15	18006	N17 W11	278	3000	3.0	22773	N18 W13	280	(BY)	5	H	220	11	CSO
81	11	16	18006	N18 W24	278	2700	3.0	22773	N18 W26	280	(BP)	5	H	200	2	CSO
81	11	17	18006	N18 W36	277	2400	3.0		N21 W39				H	210	3	CSO
81	11	18	18006	N18 W50	276	3000	2.5	22773	N18 W53	281	(AP)	5	H	140	1	HHX
81	11	19	18006	N18 W63	277	3000	2.5	22773	N18 W66	280	(AP)	5	B	180	1	HSX
81	11	20	18006	N18 W76	277	1700	2.5	22773	N17 W80	281	(AP)	4	H	100	1	HSX

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HALE REGION 18008 CMP DATE 14.9

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT		MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	9	18008	S04 E74	272	400	2.0										
81	11	10	18008	S04 E57	276	300	2.0										
81	11	11	18008	S04 E43	277	300	2.0										
81	11	12	18008	S04 E30	277	500	2.0										
81	11	13	18008	S03 E16	277	300	1.5										
81	11	14	18008	S03 E03	277	400	2.0										
81	11	15	18008	S03 W11	278	300	2.0										
81	11	16	18008	S03 W24	278	400	2.0		22797	S02 W24	278	(AF)	2	H	10	1	AXX
81	11	17	18008	S03 W37	278	400	2.5										
81	11	18	18008	S03 W53	279	400	2.5										
81	11	19	18008	S03 W67	281	200	2.0										
81	11	20	18008	S03 W80	281	100	1.0										

HALE REGION 18013 CMP DATE 16.0 RETURN OF TRAILING PORTION OF 17922 ROTATION 3

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT		MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	11	18013	N13 E57	263	400	3.0										
81	11	12	18013	N13 E45	262	300	2.5										
81	11	13	18013	N13 E32	261	400	2.0		22793	N13 E28	262	(X)	3	M	160	3	CSO
81	11	14	18013	N13 E18	262	500	2.5			N13 E18				H	10	5	BXO
81	11	15	18013	N14 E05	262	500	3.0		22793	N12 E05	262	(AF)	2	H	10	2	AXX
81	11	16	18013	N14 W08	262	500	2.5										
81	11	17	18013	N14 W22	263	500	2.5										
81	11	18	18013	N14 W36	262	500	2.5										
81	11	19	18013	N13 W50	264	300	2.0										
81	11	20	18013	N13 W62	263	200	2.0										
81	11	21	18013	N13 W76	264	200	1.5										

HALE REGION 18023 CMP DATE 16.3

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT		MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	16	18023	S16 W05	259	200	2.5			S17 W03				H	10	5	BXO
81	11	17	18023	S16 W17	258	1000	3.5			S17 W17				H	90	12	DRI
81	11	18	18023	S17 W33	259	1500	3.5		22799	S17 W30	258	(B)	5	H	200	13	DAI
81	11	19	18023	S17 W46	260	2400	4.0		22799	S17 W44	258	(B)	5	H	310	24	EAI
81	11	20	18023	S17 W59	260	3000	3.5		22799	S17 W58	259	(B)	5	H	500	13	EAO
81	11	21	18023	S17 W73	261	3000	3.5		22799	S17 W70	258	(B)	4	H	760	7	EKO
81	11	22	18023						22799	S18 W80	255	(AF)	4	H	330	3	DKC

HALE REGION 18010 CMP DATE 16.4 RETURN OF LEADING PORTION OF 17926 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT		MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	10	18010	S08 E78	255	700	1.5			S12 E68				L		5	BXO
81	11	11	18010	S07 E64	256	500	2.0										
81	11	12	18010	S08 E51	256	700	2.5										
81	11	13	18010	S08 E38	255	600	2.0										
81	11	14	18010	S08 E23	257	700	2.0										
81	11	15	18010	S08 E10	257	500	2.0										
81	11	16	18010	S07 W04	258	400	2.0										
81	11	17	18010	S07 W17	258	500	1.5										
81	11	18	18010	S07 W32	258	300	1.5										
81	11	19	18010	S07 W45	259	300	1.5										
81	11	20	18010	S07 W58	259	100	1.5										
81	11	21	18010	S06 W71	259	100	1.5										

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HALE REGION 18024 CMP DATE 16.6

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	16	18024	S51	W01	255	100	1.0										
81	11	17	18024	S51	W12	253	100	2.5										

HALE REGION 18022 CMP DATE 17.0

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	20	18022	S07	W48	249	300	2.5	22804	S07	W48	249	(B)	4	H	30	5	CRO
81	11	21	18022	S07	W62	250	200	2.0		S05	W60				R	30	2	BXO

HALE REGION 18014 CMP DATE 17.2

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	11	18014	N27	E70	250	700	2.5										
81	11	12	18014	N27	E60	247	600	2.5										
81	11	13	18014	N27	E46	247	600	2.0										
81	11	14	18014	N27	E33	247	500	2.0										
81	11	15	18014	N27	E20	247	400	1.5										
81	11	16	18014	N27	E07	247	300	1.0										
81	11	17	18014	N27	W06	247	300	1.5										
81	11	18	18014	N27	W19	245	400	1.0										
81	11	19	18014	N27	W32	246	300	1.5										
81	11	20	18014	N27	W45	246	300	1.5										
81	11	21	18014	N28	W58	246	300	1.5										

HALE REGION 18015 CMP DATE 17.4 RETURN OF TRAILING PORTION OF 17926 ROTATION 2

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	11	18015	S08	E77	243	200	1.0										
81	11	12	18015	S09	E65	242	200	1.5										
81	11	13	18015	S08	E52	241	300	1.5										
81	11	14	18015	S08	E38	242	300	2.0										
81	11	15	18015	S08	E25	242	200	1.5										
81	11	16	18015	S07	E09	245	200	1.5										

HALE REGION 18026 CMP DATE 17.4

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	17	18026	N03	W03	244	200	2.5		N03	W02				H	10	3	BXO
81	11	18	18026	N03	W17	243	200	2.5		N03	W17				H		1	AXX
81	11	19	18026	N03	W32	246	200	2.5										
81	11	20	18026	N03	W44	245	100	1.0										

HALE REGION 18018 CMP DATE 18.0

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	13	18018	N93	E57	236	100	1.0										

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HALE REGION 18017 CMP DATE 19.2 NEW + RETURN OF REGION 17939 ROTATIONS 1 AND 3

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	12	18017	S03 E85	222	900	4.0	22791	S04 E88	219	(AP)	2				
81	11	13	18017	S05 E73	220	4500	3.5	22791	S03 E69	221	(B)	5	H	80	3	CSO
81	11	14	18017	S05 E61	219	5200	3.5		S04 E59				H	230	9	DSO
81	11	15	18017	S05 E49	218	5500	3.5	22796	S05 E58	209	(AF)	3	H	10	1	AXX
81	11	15	18017	S05 E49	218	5500	3.5	22791	S03 E45	222	(D)	5	H	230	13	DSO
81	11	16	18017	S05 E35	219	5200	3.5	22791	S03 E30	224	(BY)	4	H	150	10	DAO
81	11	16	18017	S05 E35	219	5200	3.5	22796	S05 E41	213	(B)	3	H	10	3	BXO
81	11	17	18017	S05 E22	219	5500	3.0		S04 E18				H	110	19	CAI
81	11	18	18017	S05 E06	220	5500	3.0	22796	S07 E16	212	(AF)	2	H	30	2	CSO
81	11	18	18017	S05 E06	220	5500	3.0	22791	S05 E01	227	(BP)	4	H	70	9	DAI
81	11	19	18017	S05 W08	222	5000	3.0	22796	S07 E02	212	(AF)	3	H		2	BXO
81	11	19	18017	S05 W08	222	5000	3.0	22791	S05 W13	227	(BP)	4	H	60	9	CSO
81	11	20	18017	S05 W20	221	4700	3.5	22791	S05 W26	227	(BP)	4	H	50	1	CSO
81	11	21	18017	S05 W33	221	5000	3.5	22796	S05 W28	216	(AF)	3	H	70	9	CSO
81	11	21	18017	S05 W33	221	5000	3.5	22791	S06 W39	227	(BP)	4	H	70	9	CSO
81	11	22	18017					22791	S06 W55	230	(BP)	4	H	60	4	CAO
81	11	23	18017	S05 W60	221	5500	3.0	22791	S06 W68	229	(AP)	4	H	40	4	CSO
81	11	24	18017	S05 W73	222	4000	2.5	22791	S05 W86	234	(AP)	2	H	10	1	AXX
81	11	25	18017	S06 W85	219	2500	2.0									

HALE REGION 18019 CMP DATE 19.6

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	14	18019	S19 E67	213	300	2.5		S21 E67				R	30	1	AXX
81	11	15	18019	S18 E54	213	400	2.0									
81	11	16	18019	S18 E38	216	400	3.0	22798	S19 E39	215	(B)	3	H	10	5	BXO
81	11	17	18019	S19 E26	215	200	2.5		S19 E28				H	10	2	BXO
81	11	18	18019	S19 E12	214	400	2.5	22798	S20 E13	215	(AP)	2	H	30	2	CSO
81	11	19	18019	S19 W01	215	400	2.5									
81	11	20	18019	S20 W14	215	300	2.5									
81	11	21	18019	S20 W27	215	400	2.5									
81	11	22	18019					22809	S18 W42	217	(B)	3	H	10	3	BXO
81	11	23	18019	S18 W56	217	500	2.5	22809	S18 W55	216	(BF)	4	H	20	7	BXO
81	11	24	18019	S18 W68	217	300	2.5	22809	S18 W67	215	(AF)	3	H		1	AXX
81	11	25	18019	S18 W83	217	200	1.5									

HALE REGION 18027 CMP DATE 20.7

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	17	18027	N14 E42	199	200	2.0		N15 E42				H	10	2	BXO
81	11	18	18027	N14 E27	199	400	3.0	22800	N13 E28	200	(B)	2	H	20	5	BXO
81	11	19	18027	N14 E14	200	700	3.5	22800	N13 E13	201	(B)	4	H	70	16	DRO
81	11	20	18027	N14 E01	200	700	3.5	22800	N13 W01	202	(D)	4	H	190	13	DKC
81	11	21	18027	N14 W15	203	700	3.5	22800	N13 W14	202	(D)	4	H	220	8	DKC
81	11	22	18027					22800	N13 W28	203	(BY)	4	H	170	12	DKC
81	11	23	18027	N14 W43	204	1100	3.5	22800	N13 W41	202	(D)	4	H	90	5	CAI
81	11	24	18027	N14 W56	205	1400	3.5	22800	N13 W54	202	(D)	4	H	190	4	DKI
81	11	25	18027	N14 W70	204	1500	3.5	22800	N13 W68	203	(B)	4	H	40	2	DRO
81	11	26	18027	N14 W82	204	1000	3.0		N12 W79				H	10	3	AXX

HALE REGION 18028 CMP DATE 21.6

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	17	18028	S17 E53	188	200	2.0		S17 E52				H	10	1	AXX
81	11	18	18028	S18 E39	187	300	2.0	22801	S18 E37	191	(AP)	2				
81	11	19	18028	S18 E25	189	300	2.0									
81	11	20	18028	S18 E13	188	200	2.0	22805	S16 E14	187	(AF)	3	H		1	AXX
81	11	21	18028	S18 W01	189	100	1.5									
81	11	23	18028	S18 W27	188	100	1.0		S15 W23				R	10	2	BXO
81	11	24	18028	S18 W39	188	100	1.0									

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HALE REGION 18041 CMP DATE 21.6

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	26	18041	S17 W67	189	100	1.0									

HALE REGION 18025 CMP DATE 21.9

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	16	18025	N10 E71	183	200	2.0									
81	11	17	18025	N11 E58	183	300	2.0		N11 E57				H	10	2	BXO
81	11	18	18025	N10 E43	183	400	2.5	22802	N10 E41	187	(AP)	2	L	10	5	BXO
81	11	19	18025	N10 E29	185	400	2.5		N13 E23				L	10	5	BXO
81	11	20	18025	N10 E16	185	300	3.0									
81	11	21	18025	N10 E03	185	100	2.0									

HALE REGION 18029 CMP DATE 23.0 RETURN OF REGION 17945 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	17	18029	S30 E65	176	500	1.5									
81	11	18	18029	S32 E53	173	500	2.0									
81	11	19	18029	S32 E40	174	500	2.0									
81	11	20	18029	S32 E28	173	400	2.0									
81	11	21	18029	S32 E15	173	400	1.5									
81	11	23	18029	S31 W10	171	500	1.5									
81	11	24	18029	S31 W23	172	400	1.0									
81	11	25	18029	S30 W36	170	500	1.0									
81	11	26	18029	S31 W48	170	400	1.0									

HALE REGION 18030 CMP DATE 23.1 RETURN OF REGION 17946 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	17	18030	N18 E76	165	800	1.0									
81	11	18	18030	N18 E55	171	600	1.0									
81	11	19	18030	N19 E43	171	500	1.0									
81	11	20	18030	N20 E30	171	700	1.5									
81	11	21	18030	N21 E18	170	600	1.5									
81	11	23	18030	N22 W08	169	600	1.0									
81	11	24	18030	N23 W20	169	500	1.0									
81	11	25	18030	N23 W34	168	300	1.0									
81	11	26	18030	N23 W47	169	300	1.5									

HALE REGION 18031 CMP DATE 24.5 RETURN OF REGION 17948 ROTATION 5

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	18	18031	S10 E70	156	700	1.0									
81	11	19	18031	S10 E58	156	800	1.0									
81	11	20	18031	S10 E46	155	700	1.0									
81	11	21	18031	S10 E33	155	700	1.5									
81	11	23	18031	S09 E11	150	600	1.0									

CONT

REGIONS OF SOLAR ACTIVITY

NOVEMBER 1981

HALE REGION 18031 (CONT) CMP DATE 24.5 RETURN OF REGION 17948 ROTATION 5

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	24	18031	S09 W02	151	600	1.0									
81	11	25	18031	S09 W17	151	600	1.0									
81	11	26	18031	S09 W32	154	700	1.5									
81	11	28	18031						S13 W57				B	10	1	HSX

HALE REGION 18032 CMP DATE 24.6 RETURN OF LEADING PORTION OF 17957 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	19	18032	N12 E67	147	200	1.0									
81	11	20	18032	N13 E54	147	200	1.0									
81	11	21	18032	N13 E41	147	200	1.0									
81	11	23	18032	N14 E14	147	300	1.5									
81	11	24	18032	N14 W01	150	200	1.5									
81	11	25	18032	N14 W16	150	300	1.5									
81	11	26	18032	N14 W28	150	200	1.5									

HALE REGION 18033 CMP DATE 26.0 RETURN OF LEADING PORTION OF 17960 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	20	18033	N10 E75	126	400	1.0									
81	11	21	18033	N11 E62	126	400	2.0	22806	N10 E58	130	(B)	2	H	20	4	BXO
81	11	23	18033	N11 E32	129	300	2.0									
81	11	24	18033	N12 E18	131	300	2.0		N14 E23				L		1	AXX
81	11	25	18033	N11 E03	131	300	2.0									
81	11	26	18033	N11 W10	132	300	1.5		N14 W04				H		2	BXO

HALE REGION 18034 CMP DATE 26.9 NEW, NEAR LOCATION OF 17958

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	21	18034	S13 E72	116	300	2.0									
81	11	23	18034	S13 E44	117	200	1.0									
81	11	24	18034	S13 E30	119	100	1.0									
81	11	25	18034	S13 E15	119	500	3.5	22812	S14 E17	118	(AF)	3	H	20	3	CRO
81	11	26	18034	S13 E03	119	500	2.0									

HALE REGION 18035 CMP DATE 27.7 RETURN OF REGIONS 17955 AND 17956 ROTATION 3

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	19	18035					22803	S08 W67	281	(AP)	3				
81	11	21	18035	N14 E80	108	3400	2.5	22807	N16 E71	117	(AP)	3	H	20	1	HRX
81	11	21	18035	N14 E80	108	3400	2.5	22808	N08 E79	109	(AP)	2	L		1	AXX
81	11	22	18035					22807	N15 E55	120	(B)	3	H	20	3	CRO
81	11	22	18035					22808	N07 E67	108	(B)	3	H	20	4	BXO
81	11	23	18035	N11 E53	108	3000	3.0	22807	N16 E45	116	(AP)	4	H	10	1	AXX
81	11	23	18035	N11 E53	108	3000	3.0	22803	N07 E53	108	(B)	3	H	20	4	BXO
81	11	24	18035	N12 E38	111	3400	3.0	22807	N16 E32	116	(AP)	4	H	10	1	AXX
81	11	24	18035	N12 E38	111	3400	3.0	22803	N06 E41	107	(AF)	3	H	30	6	BXO
81	11	24	18035	N12 E38	111	3400	3.0	22810	N13 E40	108	(B)	3	H	30	6	BXO
81	11	25	18035	N13 E24	110	3000	3.0	22807	N16 E19	116	(AP)	3	H	10	2	AXX
81	11	25	18035	N13 E24	110	3000	3.0	22810	N12 E26	109	(B)	4	H	70	9	CAO
81	11	25	18035	N13 E24	110	3000	3.0	22808	N06 E26	109	(AF)	3	H	10	3	BXO
81	11	26	18035	N13 E12	110	3000	3.5		N12 E13				H	100	20	DAI
81	11	27	18035						N11 E01				R	260	47	EAI
81	12	1	18035	N13 W55	111	4500	3.5		N13 W55				H	430	17	EHI

CONT

REGIONS OF SOLAR ACTIVITY

NOVEMBER 1981

HALE REGION 18035 (CONT) CMP DATE 27.7 RETURN OF REGIONS 17955 AND 17956 ROTATION 3

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	12	2	18035	N14 W68	111	4500	3.0	22810	N13 W68	111	(B)	4	H	360	5	CHO
81	12	3	18035	N14 W80	110	3800	3.5	22810	N12 W81	110	B)	3				

HALE REGION 18036 CMP DATE 27.7

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	21	18036	S03 E84	104	300	2.0									
81	11	23	18036	S02 E55	106	300	1.5									
81	11	24	18036	S03 E38	111	300	1.5									
81	11	25	18036	S03 E24	110	300	1.5		S03 E24				M		2	AXX
81	11	26	18036	S03 E12	110	200	1.0									

HALE REGION 18043 CMP DATE 27.7

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	12	1	18043	N05 W53	109	100	1.5									
81	12	2	18043	N05 W66	109	100	1.0									
81	12	3	18043	N05 W79	109	100	2.0									

HALE REGION 18042 CMP DATE 29.0

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	26	18042	S23 E21	101	100	1.0		S20 E16				M	60	5	CRO
81	11	27	18042						S20 E05				B	40	5	CAO
81	12	1	18042	S23 W46	102	600	2.5		S21 W49				H		1	AXX
81	12	2	18042	S22 W59	102	500	2.0	22813	S21 W61	104	(AP)	3	M	10	1	AXX
81	12	3	18042	S22 W73	103	800	2.5	22833	S20 W72	101	(AF)	3				

HALE REGION 18057 CMP DATE 29.0

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	12	2	18057	S18 W49	92	200	2.5	22814	S18 W48	91	(AF)	2	M	10	1	AXX
81	12	3	18057	S18 W62	92	400	2.5	22814	S17 W61	90	(B)	2				

HALE REGION 18037 CMP DATE 29.6 RETURN OF REGION 17963 ROTATION 2

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	23	18037	N07 E75	86	500	1.5									
81	11	24	18037	N12 E65	84	1000	1.5									
81	11	25	18037	N13 E51	83	900	2.0									
81	11	26	18037	N13 E39	83	800	1.5									

REGIONS OF SOLAR ACTIVITY

NOVEMBER 1981

HALE REGION 18044 CMP DATE 30.2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	12	1	18044	N16	W20	76	1600	3.5		N15	W20				H	190	21	EAI
81	12	2	18044	N16	W33	76	2700	3.5	22815	N16	W33	76	(BY)	5	H	190	25	EAI
81	12	3	18044	N16	W46	76	2400	3.5	22815	N15	W46	75	(B)	4				
81	12	4	18044						22815	N15	W60	76	(D)	5				
81	12	5	18044						22815	N16	W78	80	(AF)	3	R	190	6	DAO
81	12	6	18044	N17	W85	75	400	3.5										

HALE REGION 18038 CMP DATE 30.7

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	24	18038	N28	E77	72	800	3.5										
81	11	25	18038	N27	E65	69	1700	2.5										
81	11	26	18038	N27	E53	69	1300	2.0										
81	12	1	18038	N28	W13	69	1000	1.5										
81	12	2	18038	N29	W23	66	600	1.0										

NOTE: No solar magnetograms were made at Kitt Peak National Observatory on November 22, 27-30, 1981.
On these dates calcium spectroheliograms from Sacramento Peak Observatory were used: November 1-5, 7-20, 24-26.
No Mt. Wilson sunspot data were available for November 5, 6, 14, 17, and 26-30, 1981.

CONTIGUOUS PLAGES FOR NOVEMBER 1981: 17955/17960
17969/17972
17992/17993

DAILY CALCIUM PLAGE INDEX

NOVEMBER 1981

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
81	11	1	62.6	81	11	11	78.7	81	11	21	25.1
81	11	2	71.1	81	11	12	83.3	81	11	22	*
81	11	3	69.1	81	11	13	74.6	81	11	23	19.6
81	11	4	77.6	81	11	14	72.0	81	11	24	17.3
81	11	5	77.3	81	11	15	65.4	81	11	25	25.5
81	11	6	82.6	81	11	16	59.9	81	11	26	33.3
81	11	7	79.6	81	11	17	50.5	81	11	27	*
81	11	8	81.1	81	11	18	43.6	81	11	28	*
81	11	9	79.9	81	11	19	37.3	81	11	29	*
81	11	10	81.0	81	11	20	30.5	81	11	30	*

* NO OBSERVATIONS

SUDDEN IONOSPHERIC DISTURBANCES

NOVEMBER 1981

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	HALE REGION
01	0442	0608	0448	2	5	1			2	1	2		0441	17969
01	0550	0559	0553	1-	1					1			0550	17969
01	0636	0712	0640	1-	3				1	1	1		0635	17969
01	0924	1000	0933	1-	3			1		1			*	
01	1121	1135	1128	1-	3			1		1			*	
01	1449	1507	1451	1	3				1		2		1449	17969
01	1535	1640	1539	1-	5	1			1		16		1539	17956
01	1647	1722	1653	1	3				1		10		1643	17969
01	1723	1745	1728	1-	3				1		12		1722E	17969
01	1814	1930	1818	1	5	2			1		16		1813	17969
01	2106	2130	2108	1-	3						5		2104	17969
01	2254	0007	2259	1	3	1			2		6		2254	17979
02	0046	0110	0050	1-	1				1				0046	17969
02	0145	0248	0153	1+	3	2			1	1			0145	17969
02	0309	0354D	0314	1-	3	1			1	1			0308	17969
02	0354	0427	0359	1-	3	1			1	1			0353	17969
02	1211	1250	1215	1	3			2		1			1213	17969
02	1459	1517	1507	1	3	1					8		1501	17963
02	1648	1730	1702	2	3						6		*	
02	1730	1745	1732	1-	3						3		*	
02	2124	2234	2136	1-	3				1		4		*	
02	2254	2322	2300	1-	1				1				2254	17972
02	2331	2421	2335	1-	3				1	1			2330	17972
03	0252	0312	0301	1-	3	1			1	1			*	
03	0312	0339	0319	1-	3	1			1	1			*	
03	0626	0742	0639	1	3				1	1			*	
03	0835	0855	0840	1	1				1				0834	17969
03	1412	1422	1414	1-	3			1	1		2		*	
03	1459	1530	1503	1	3						3		1500E	17989
03	1655	1725	1700	1-	3				1		1		1650	17963
03	2014	2045	2021	1-	3						5		2012	17960
03	2102	2140	2112	1	3						2		2102	17960
04	0513	0552	0518	1-	3				2	1	3		0511	17969
04	0552	0636D	0556	1-	3				1	1	2		0547E	17966
04	0636E	0727	0642	1-	1				1		1		0633	17966
04	0805	0815	0808	1-	3				1	1	1		0805	17969
04	0824	0840	0828	1	5			1		1	1		NF	
04	1050	1200	1116	1-	5	1		2	2	1	1		1049	17969
04	1105	1205	1117	1	5	1		4	1	1	2		*	
04	1142	1155	1148	1-	3	1			2	1			1147	17969
04	1605	1620	1608	1-	3	1					11		1606	17969
04	1830	1850	1832	2+	3	1			1		14		1825	17969
04	1945	2130	1955	1-	5	2			1		11		1944	17969
04	2123	2230	2134	1-	3				2				NF	
05	0003	0057	0012	1-	3	2			1	1			*	
05	0118	0138	0121	1-	3				1	1			*	
05	0212	0356	0218	2	5	2			1	1	3		*	
05	0408	0508	0424	1-	3				1	1			*	
05	0834	1014	0840	3+	5	4		5	1	1	6		*	
05	1151	1200	1153	1-	1					1			1150E	17963
05	1239	1325	1250	2+	5	3		5	2	1	7		*	
05	1410	1413D	1413	1-	1				1				1406	17989
05	1449	1535	1453	1-	5			2	1	1	8		1448	17972
05	2313	2348	2318	1-	1				1				2313	17969
06	0118	0148	0126	1-	1				1				*	
06	0240	0430	0256	1	1				1				NF	
06	0243	0418	0300	1	3	1			2	1	1		NF	
06	1014	1105	1024	1-	3			1	2	1	1		NF	
06	1603	1615	1608	1-	3						2		*	
06	1730	1800	1737	1	3						7		1727	17969
06	2017	2040	2026	1	3						6		2011	17969
07	0015	0126	0023	1-	3	2			2	1			0011	17969
07	0302	0345	0307	1-	3	1			1	1			0259	17969
07	0354	0538D	0401	3+	5	2			1	1	6		0354	17969
07	0718	0827	0727	1-	3				1		1		0718	17969
07	0843	0900	0850	1	3				1	1	1		0846	17983
07	1827	1845	1833	1	3						8		1820	17989

SUDDEN IONOSPHERIC DISTURBANCES

NOVEMBER 1981

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	HALE REGION
08	0317	0357D	0324	3	5	2			2	1	6		*	
08	0357E	0551	0404	2	3	1			1		5		*	
08	1140	1305	1203	1	3			2					*	
08	1658	1730	1706	1+	3						10		*	
08	1903	2040	1930	2	3						12		*	
08	2232	2340	2241	1-	3				1		4		*	
09	0026	0156	0033	1-	3	1			1	1			NF	
09	0420	0616D	0510	2+	3				1	1			0419	17989
09	0616E	0712D	0622	2	3				1	1			0612	17989
09	0712E	0821	0724	1	3			1	1	1			*	
09	0936	0950	0938	1	3			1	1	1			*	
09	1235	1340	1256	3	5	3		6	2	1			*	
09	1700	1745	1709	1	3						8		*	
09	2018	2100	2030	1+	3						10		*	
10	0505	0545D	0515	1-	3				1	1	2		0510	17969
10	0545E	0813	0556	2+	5	1			2	1	5		0545	17969
10	1502	1545	1508	1-	3	1			1		6		*	
10	1554	1615	1559	1	3				1		1		*	
10	1632	1651	1640	1	3						3		*	
10	1710	1726	1715	1-	3						3		*	
10	1726	1745	1730	1-	3						5		*	
10	1900	1940	1910	2	3						9		*	
10	2016	2045	2023	1	3						7		*	
10	2323	0028D	2350	1-	1				1				*	
11	0030	0150D	0038	1	3				2	1	2		0035	17969
11	0344	0416	0349	1-	3				1	1			*	
11	0438	0638U	0456	1-	3				1	1	2		*	
11	0851	1023	0900	2	5	2		5	1	1	5		0854	18011
11	0930	0950	0934	1-	3	1		3		1			*	
11	1300	1315	1304	1-	5			3	1	1	6		*	
11	1450	1500	1453	1-	5	1		2	1	1	10		*	
11	1724	1750	1730	1	3						3		*	
11	1910	2000	1922	2	3						11		*	
11	2153	2328	2206	1-	3				1		5		*	
12	0018	0100	0031	1-	3				1	1			*	
12	0108	0338	0123	3	5	2			1	1	5		*	
12	0227E	0306U	0231	1-	1	1							0220	18006
12	0338	0446	0346	1	3				1	1	5		0330	17998
12	0449	0537	0505	1-	3				1	1	1		*	
12	0624	0728D	0641	2+	3				1	1	6		*	
12	0728E	0800	0739	1	3				1		2		NF	
12	1143	1155	1148	1-	3			2		1			*	
12	1205	1230	1210	1	3	1		1		1			*	
12	1405	1430	1411	1	5	1		2			4		*	
12	1545	1602	1551	2	3						16		*	
12	1602	1730	1608	1+	3						12		*	
12	1815	1830	1819	1+	3	1					13		*	
12	1855	1918	1904	1	3	1					8		*	
12	1920	1945	1930	1	3						10		*	
12	2102	2147	2107	1-	3					1	5		*	
12	2336	0016	2353	1-	3	1			1				*	
13	0014	0045	0024	1-	3	1			1	1			NF	
13	0102E	0221	0107	1	5	1			1	1	5		*	
13	0139	0254	0204	1	3	2			2	1	1		*	
13	0254	0326	0304	1	3				1	1	5		*	
13	0326	0504	0339	2	3	1			1		5		NF	
13	0806	0900	0815	2	5	1		3	1	2	2		0807	17998
13	1103	1306	1112	1	5	3		5	1	1	1		*	
13	1128	1205	1140	1	3	3		2		1	1		*	
13	1407	1420	1410	1-	5	1		2		1	7		*	
13	1500	1515	1503	1	3						6		*	
13	1630	1730	1657	2+	3						13		*	
13	1827	1841	1829	2	5	2			1		15		*	
13	1921	2008	1928	1-	5				2		13		1922	17998
13	2218	2314	2231	1-	1				1				2220	17996
13	2314	0103D	2346	1	1				1				2315	17998
13	2343	0000	2348	1-	3						3		2344	17998

SUDDEN IONOSPHERIC DISTURBANCES

NOVEMBER 1981

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	HALE REGION
14	0101	0155	0106	1	3	2			1	1	5		*	
14	0419	0516	0429	1-	3				2	1	2		0421	17998
14	0536	0706	0543	2+	3	1			2	1	5		0540	17998
14	0710	0800	0722	1-	3			2		1			*	
14	0723	0800	0736	1	3				1		3		0726	17998
14	1223	1240	1227	1-	3			1	1	1			1222	18006
14	1404	1445	1424	1	3				1		3		1404	18006
14	1929	1945	1933	1-	3						3		1924E	18017
14	2157	2331	2220	2+	5	3			1		7		*	
14	2331	0048	2340	1-	1				1				2330	18017
15	0136	03090	0144	1-	5				1	1	3		0138E	18006
15	0202	0302	0211	1-	3					1	1		0200	18017
15	0241	0332	0247	1+	1	1							0239	17993
15	0310	0400	0319	1-	3				1	1	1		0309	18017
15	0428	0512	0437	1-	3				1	1			0429E	18017
15	1315	1408	1323	1-	3			1	1		1		*	
15	1423	1500	1430	2+	5	4		5	1	1	14		1421	18017
15	1529	1637	1536	1-	3				1		7		1529	17992
15	1725	1815	1738	2+	3						5		1722	17993
15	2344	0041D	2355	1	1				1				2346	17992
16	0041E	0233	0056	1	3	1			1	1			0037	17998
16	1244	1310	1250	1-	5	2		5		1	4		1240	18006
16	2306	0000	2330	3	3						4		NF	
17	1154	1300	1202	1	5	1		4	1	1	2		1155	17992
17	2121	2234	2156	1-	3				1		5		*	
18	0046	0106	0049	1	3	1			2				0043	18023
18	0121	0252D	0128	1+	5	1			1	1	5		0122	18023
18	0252E	0324	0258	1-	1				1				0249	18021
18	0412	0544	0420	3	5	2			1	1	5		0413	18023
18	0602	0657	0608	1-	1				1				0601	18017
18	0907	0925	0910	1-	3	1		1		1	1		0907	18017
18	1023	1035	1028	1-	3			1		1			1023	18023
18	1135	1220	1141	2	3	1		5		1	1		*	
18	1413	1457U	1423	1	5	1		1	1		4		*	
18	1514	1615	1520	1-	3	1			1		9		1517	18023
19	0155	0426	0216	1	3	1			2				*	
19	0226	0548	0252	2+	3	1			1	1	3		*	
19	1049	1105	1052	1-	3			3		1	1		1048	18012
20	1530	1655	1533	1	3	1			1		10		1531	18027
21	0221	0240U	0223	1-	1	1							0220	18017
21	1555	1630	1600	1	3						8		1554	18027
21	2000	2100	2023	2	3	1					4		2000	18025
22	0252	0431	0300	1-	3				2	1			0242	No data
22	0322	0428	0331	2+	5	2			1	1	5		0322	No data
22	0636	0655	0641	1-	3				2				NF	
22	0655	0855	0716	2+	3				1	1	4		0655	No data
22	1743	1815	1748	1	3				1		5		*	
22	2243	2306	2247	1-	1				1				2236	No data
23	0445	0612	0459	1	3				1	1			*	
23	1155	1215	1205	1-	3	2		4		1			1155E	18035
23	1907	1938	1911	1-	3				1		6		*	
24	0135	0212	0140	1-	3				1	1			NF	
24	1547	1700	1556	1-	3	1			1				*	
25	0028	0113	0037	1-	3	1			1				*	
25	0147	0304	0207	1-	3	1			1	1			*	
25	0304	0417	0317	1-	3	1			2	1	2		*	
25	0520	0626	0526	1-	3				2	1	2		0520	18037
25	0742	0821	0750	1-	3				1	1	2		0745	18039
25	1255	1355	1302	1-	3			2	1				1253	18027
25	1819	1945	1825	1-	3	1			1		12		1816	18039
25	2318	0044	2332	1-	3				1		3		2325E	18035

SUDDEN IONOSPHERIC DISTURBANCES

NOVEMBER 1981

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	HALE REGION
26	0930	1030	0943	1-	3				1	1			0930	18039
26	1415	1445	1420	1-	3			1			2		*	
26	1427	1600	1440	1	3				1		4		1433	No data
26	1615	1745	1622	2+	3	1					16		1615	No data
26	1935	2024	1950	1-	5	2			1		15		1927	No data
26	2325	0009	2333	1-	1				1				2326	No data
27	0430	0520	0439	1-	3				2	1			NF	
27	1723	1745	1728	1-	3				1		7		1723	No data
27	1954	2030	2001	1	3						8		*	
28	0040E	0106D	0049	1-	1	1							*	
28	0128	0151	0138	1-	1				1				0130E	No data
28	0217	0256	0224	1-	3				1	1			0220	No data
28	0729	0905	0738	1	3				1		2		0727	No data
28	0947	1155	0956	1-	3	1		1	1	1	1		0943E	No data
28	1555	1630	1602	1-	1				1		1		*	
29	0205	0342	0217	1	3				1	1	1		*	
29	0920	1024	0931	1-	1				1				0919	No data
29	1549	1606D	1558	1-	3				1		1		*	
29	1608	1730	1645	3	3				1		12		1600	No data
29	1929	1945	1933	1-	3						11		1928	No data
30	0206	0256	0211	1-	1					1			0202	No data
30	0526	0554	0533	1-	1				1				0520	No data
30	0823	0840	0826	1-	3	1			1	1			0827	No data
30	0942	1010	0946	1-	3				1	1			0941	No data
30	1136	1200	1143	2	3			3	2	1	2		*	

DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
REGION																															
17956	1																														
17960			2																												
17963		1	1		1																										
17966				2																											
17969	9	5	1	7	1	2	4			2	1																				
17972		2			1																										
17983							1																								
17989			1		1		1		2																						
17992															2		1														
17993															2																
17996													1																		
17998												1	4	3		1															
18006												1		2	1	1															
18011											1																				
18012																			1												
18017														2	4			2			1										
18021																		1													
18023																		5													
18025																					1										
18027																				1	1				1						
18035																							1		1						
18037																									1						
18039																									2	1					
NO FLARE				2		3			1				1	2			1					1		1			1				
NO FLARE PATROL	2	3	4	1	6	2		6	5	8	8	14	9	3	1		1	2	2			1	2	1	3	1	1	2	2		
NO DATA																						4				4	1	4	3	4	
EVENT TOTALS	12	11	9	12	10	7	6	6	8	10	10	17	15	10	10	3	2	10	3	1	3	6	3	2	8	6	3	6	5	4	

OBSERVATORIES REPORTING FOR NOVEMBER 1981:

Ayrshire, Scotland (AY)	SES	Louisville, Kentucky, USA (A26)	SES
Darmstadt, GFR (DA)	SWF	Mayfield Village, Ohio, USA (A28)	SES
Durham, North Carolina, USA	SES	Maui, Hawaii, USA (MI)	SWF
Edenvale, Transvall, South Africa (A52)	SES	Missoula, Montana, USA (A31)	SES
Ellensburg, Washington, USA (EB)	SES	Naturena, South Africa (NA)	SES
Eureka, Montana, USA (A56)	SES	Panska Ves, Czechoslovakia (PU)	SEA, SWF
Frenchtown, Montana, USA (A56)	SES	Portage, Michigan, USA (A51)	SES
Glenorchy, Tasmania, Australia (GN)	SWF	Sao Paulo, Brasil (UM)	SES, SPA
Hiraiso, Japan (HI)	SWF	Sofia, Bulgaria (SF)	SEA
Hobart, Tasmania, Australia (A43)	SES	St. Cloud, Minnesota, USA (SC)	SES
Houston, Texas, USA (A50)	SES	Thornwood, New York, USA (A48)	SES
Huancayo, Peru (HU)	SWF	Trenton, New Jersey, USA (NJ)	SES
Inubo, Japan (IN)	SPA	Tucson, Arizona, USA (A9)	SES
Kasugai, Japan (KA)	SPA	Upice, Czechoslovakia (UI)	SEA
Kuhlungsborn, GDR (KU)	SEA, LF-SPA	Valley Cottage, New York, USA (A1)	SES
La Crescenta, California, USA (A40)	SES	Vsetin, Czechoslovakia (VS)	SEA
Lake Hiawatha, New Jersey, USA (A32)	SES	Yakima, Washington, USA (A37)	SES
Latrobe, Pennsylvania, USA (A19)	SES	Zilina, Czechoslovakia (ZL)	SEA
Lintong, China (LT)	LF-SPA		

NF No flare
* No flare patrol
Observations are not necessarily continuous for each reporting station.

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

NOVEMBER 1981

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
01	0000	0715	CULG				0003	0715					IIIN,W
			CULG				0015.5	0016	3	0015.5	0016	2	IIIG,V
			CULG				0152.5	0154	1				IIIG,U
			CULG				0238	0238.5	2				IIIB
			LEAR				0442.5	0444.5	2				CONT
			CULG	0443	0443.5	1	0443	0444	3	0443	0443.5	2	IIIG,U
			CULG				0454	0454.5	2	0454	0454.5	1	IIIG
			LEAR				0454.0	0454.9	2				CONT
			LEAR				0459.3	0500.4	2				CONT
			CULG	0459.5	0500	1							DCIM
			CULG				0459.5	0500	3	0459.5	0500	2	IIIG
			CULG				0504		1				IIIB
			LEAR				0504.0	0504.6	1				CONT
			LEAR				0511.5	1018.0	1				B
			CULG	0613	0614.5	2	0613	0628.5	2			II	
			CULG				0618	0623	1			IV	
			CULG				0621.5	0623	1				IIIG
			CULG	0649.5		1	0649.5		1				IIIB
	0925	1500	BLEN										
	0841	1529	WEIS				0943.2	0943.4	2				IIIG
			WEIS				1017.7	1018.2	2				IIIG
			WEIS				1136.8	1137.2	2				IIIG
			WEIS				1155.6	1156.7	1				IIIG
			WEIS				1226.4	1227.1	2				IIIG
			WEIS				1230.6	1231.2	1				IIIG
			WEIS				1239.5	1240.4	2				IIIG
			WEIS				1243.6	1244.1	3				IIIG
			WEIS				1317.7	1317.9	1				RS
			WEIS				1328.1	1329.3	3				IIIG
	1338	2340	HARV				1341	1345	2				IIIGG
			WEIS				1344.6	1344.9	1				IIIG
			HARV				1346	2332	1				INW
			WEIS				1356.8	1357.1	2				IIIG
			HARV				1357	1403	2				IIIG
			WEIS				1359.3	1359.6	3				IIIG
			WEIS				1402.1	1403.5	3				IIIG
			HARV				1412	1413	2				IIIG
			WEIS				1412.4	1412.7	3				IIIG
			HARV				1428	1429	2				IIIGG
			WEIS				1428.0	1429.6	2				IIIG
			HARV				1436	1437	2				IIIG
			WEIS				1436.3	1437.0	1				IIIG
			WEIS				1439.9	1440.1	3				IIIB
			HARV				1440		3				IIIG
			HARV				1443	1444	3				IIIG
			WEIS				1443.2	1443.7	3				IIIG,U
			HARV				1456	1457	2				IIIG
			WEIS				1456.2	1456.7	3				IIIG
			HARV				1508	1509	2				IIIG
			WEIS				1508.4	1509.3	1				IIIG
			HARV				1527		1				IIIG,U
			WEIS				1527.0	1527.2	1				IIIB
			HARV	1534	1536	2	1534	1536	2	1534		2	IIIGG
			HARV				1553	1554	3	1553	1554	2	IIIG,V
			SGMR				1553.1	1554.1	2				CONT
			HARV				1556	1557	2				IIIG
			SGMR				1556.0	1606.4	1				CONT
			HARV				1606	1612	3	1606	1612	2	IIIG,V
			HARV				1629	1631	2	1629	1631	2	IIIG
			HARV				1633	1639	2				IIIGG
			HARV				1641	1649	2				IIIGG
			HARV				1707		2	1707		2	IIIG
			HARV				1759		2	1759		2	IIIG
			PALE				1812.6	1815.2	3				V
			SGMR				1812.7	1814.7	3				V
			SGMR				1812.7	1814.7	3				V
			HARV	1813	1816	2	1812	1818	3	1812	1818	2	IIIGG,V
			HARV				1826	1828	2	1826	1828	2	IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

NOVEMBER 1981

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
01			HARV				1907	1908	2				IIIG
			PALE				1914.7	1915.1	1				III
			HARV				1915		3	1915		3	IIIG
	2016	2400	CULG				2016	2400					IIIN,W
			CULG	2016	2400								IN,W
			CULG				2049	2310	1				IIIN
			HARV				2050	2051	2				IIIG
			CULG	2104.5	2107	3	2104.5	2107.5	3	2104.5	2107.5	3	IIIG,V
			PALE				2104.7	2107.3	2				CONT
			CULG	2106	2107	2							CONT
			HARV	2106	2107	2	2105	2107	3	2105	2107	2	IIIGG,V
			HARV	2109	2110	1	2109	2110	1				IIIG
			HARV				2115		1				IIIG
			CULG			1	2147.5	2149	2	2147.5	2149		IIIG
			HARV				2148	2149	2				IIIG
			LEAR				2239.1	2239.3	1				CONT
			HARV				2251	2252	2				IIIG
			PALE				2254.9	2257.8	3				V
			LEAR				2254.9	2358.3	3				CONT
			HARV	2255	2258	2	2255	2258	3	2255	2256	2	IIIGG,V
			CULG	2255	2258.5	3	2255	2258	3	2255	2258	3	IIIG,V
			LEAR				2309.7	2310.2	1				CONT
			LEAR				2345.1	2345.4	1				CONT
			CULG				2346		1	2346		1	IIIB
			CULG	2347.5	2348	2							IIIG
02	0000	0715	CULG				0000	0715					IIIN,W
			LEAR				0002.4	0002.6	1				CONT
			CULG				0014	0715	2	0014	0543	2	IIIG,N
			PALE				0014.3	0014.8	1				III
			LEAR				0014.6	0015.0	1				CONT
			LEAR				0021.0	0022.3	1				CONT
			PALE				0045.6	0047.4	1				CONT
			LEAR				0045.7	0047.7	2				CONT
			CULG				0046	0715	2	0046	0615	2	IIIG,V,N
			CULG	0046	0559	2							DCIM,N
			LEAR				0136.3	0137.4	1				CONT
			LEAR				0143.9	0152.8	3				CONT
			PALE				0145.3	0147.2	3				V
			CULG	0145.5	0146	3	0145	0148	3	0145.5	0148	3	IIIG,V
			CULG				0213	0715	1				IS
			LEAR				0224.3	0227.6	1				CONT
			LEAR				0251.4	0252.3	2				CONT
			CULG				0251.5	0252	3	0251.5	0252	2	IIIB,V
			LEAR				0300.3	0303.2	1				CONT
			LEAR				0305.7	0311.6	3				CONT
			CULG	0306	0312	3	0308	0310.5	3	0308	0311	3	IIIG,V
			CULG	0308	0310	1							CONT
			PALE				0308.3	0309.8	2				V
			LEAR				0323.7	0324.2	1				CONT
			LEAR				0333.3	1018.0	1				B
			CULG				0350	0351.5	3	0350.5	0351.5	1	IIIG,U
			LEAR				0351.1	0358.2	2				CONT
			CULG	0414	0715	1							IN
			CULG				0446	0715	1				DC,N
			LEAR				0508.9	0509.6	2				CONT
			LEAR				0515.1	0516.8	2				CONT
			LEAR				0539.7	0544.1	2				CONT
			LEAR				0557.9	0600.6	2				CONT
			LEAR				0632.6	0634.8	2				CONT
			CULG	0705	0705.5	3	0705	0706	3				IIIB
			LEAR				0705.2	0705.7	2				CONT
	0643	1525	WEIS				0705.2	0705.4	2				IIIG
	0615	1500	BLEN				0705.2	0705.6	1				U
			WEIS				0714.2	0715.2	2				IIIG
			LEAR				0714.5	0723.5	2				CONT
			WEIS				0722.4	0723.2	3				IIIG
			BLEN				0722.4	0722.9	2				IIIG
			LEAR				0724.8	0727.3	3				CONT
			WEIS				0724.9	0726.2	3				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

NOVEMBER 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
02			WEIS				0816.7	0819.5	3				IIIGG
			LEAR				0816.8	0819.6	1				CONT
			BLEN				0816.8	0817.1	3				IIIG
			BLEN				0818.6	0819.1	2				IIIU
			LEAR				0843.3	0844.2	2				CONT
			WEIS				0843.4	0844.1	3				IIIG
			BLEN				0843.4	0843.6	2				III
			WEIS				0925.5	0926.6	3				IIIG
			WEIS				1000.5	1000.7	1				IIIB
			WEIS				1116.9	1117.3	1				IIIG
			WEIS				1125.9	1126.1	1				IIIB
			WEIS				1157.8	1158.3	2				IIIG
			BLEN				1213.6	1214.8	3				IIIG,V
			WEIS				1213.6	1216.9	3				IIIG
			BLEN	1213.6	1213.8	2							DCIM
			WEIS				1334.6	1334.9	2				IIIG,U
	1339	2335	HARV				1339	1718	1				IN
			WEIS				1410.7	1411.0	1				IIIG
			HARV				1411		2				IIIG
			WEIS				1422.8	1422.9	2				IIIB
			HARV				1428	2247	2	1859	1944	1	IIIN
			WEIS				1500.7	1506.2	3				IIIGG
			BLEN				1502.2	1504.5	2				IIIGG,V,U
			HARV	1503	1508	2	1501	1510	3	1504	1509	2	IIIGG,V
			SGMR				1503.8	1509.1	1				CONT
			WEIS				1508.3	1511.2	3				IIIGG
			BLEN				1508.3	1508.8	2				III
			HARV	1606		2	1606		2				IIIG
			HARV				1619	1621	3	1619	1621	2	IIIG,V
			HARV				1700		2	1700		2	IIIG
			HARV				1718	2335	2				I
			HARV				1836		2	1836		2	IIIG
			PALE				1836.1	1836.4	2				III
			HARV				1845		2	1845		2	IIIG
			HARV	1956	1957	2	1956	1957	2				IIIG
			HARV				2012		2	2012		2	IIIG
	2016	2400	CULG	2016	2400	1							IS
			CULG				2016	2400					IIIN,W
			CULG				2016	2315					IS,W
			HARV				2022	2023	2	2022	2023	1	IIIG
			CULG				2022.5	2343	2	2148	2344	1	IIIN
			HARV				2041	2046	2	2044	2046	1	IIIGG
			CULG				2041.5	2236	1				IIIN
			HARV				2053	2054	2	2053	2054	1	IIIG
			PALE				2053.5	2053.7	1				III
			CULG				2138	2138.5	3	2138	2138.5	1	IIIB,V
			PALE				2138.2	2159.2	2				S
			PALE				2138.2	2159.2	2				S
			HARV				2141		2				IIIG
			HARV				2147	2150	2	2147		1	IIIGG
			CULG	2147	2147.5	1	2147	2147.5	3	2147	2147.5	3	IIIG
			CULG				2154	2156	3	2154	2156	2	IIIG
			HARV				2154	2156	2	2154	2156	1	IIIGG
			CULG				2158.5	2159.5	3	2159	2159.5	2	IIIG
			LEAR				2158.6	2159.3	1				CONT
			HARV				2159		2	2159		1	IIIGG
			HARV	2203	2004	2	2203	2004	2				IIIGG
			LEAR				2230.2	2354.3	1				S
			LEAR				2230.2	2354.3	1				S
			LEAR				2230.2	2354.3	1				S
			LEAR				2230.2	2354.3	1				S
			LEAR				2254.5	2258.3	2				CONT
			CULG				2254.5	2255.5	3	2254.5	2255.5	3	IIIG
			HARV				2255	2258	3	2255	2258	1	IIIGG
			CULG	2257.5	2258	3	2257	2258	3	2257	2258	3	IIIG
			CULG				2315	2400	1				IS
			LEAR				2319.6	2320.2	1				CONT
			CULG				2320		2	2320		2	IIIB
			LEAR				2345.1	2345.4	1				CONT
03			CULG				0000	0715					IIIN,W

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
03	0000	0715	CULG	0000	0715	1	0000	0715	1				IS
			CULG				0004	0004.5	3	0004	0004.5	3	IIIG
			CULG				0022	0618	1				IIIN
			CULG							0022	0329.5		IIIN,W
			LEAR				0025.0	1019.0	1				B
			CULG				0208.5	0209	1	0208.5	0209	2	IIIG
			CULG	0407.5	0408	2	0407.5	0408.5	2	0407.5	0408.5	2	IIIG
			CULG	0409.5	0410	3	0409.5	0410.5	2	4049.5	0410.5	3	IIIG
			CULG				0412	0413	2	0412	0413	2	IIIG
			CULG	0421	0631	1							N,DCIM
			CULG				0432.5	0440	1				II
			LEAR				0656.9	0657.3	2				CONT
	0648	1103	WEIS				0656.9	0657.2	3				IIIB
			WEIS				0657	1331	1				IN
			CULG				0657		2				IIIB
			WEIS				0742.4	0742.7	3				IIIG,U
	0615	1500	BLEN				0742.6	0742.8	2				III,U
			LEAR				0930.1	0931.3	1				CONT
			WEIS				0930.3	0930.4	1				IIIB
			WEIS				0937.6	0937.8	1				IIIG
			WEIS				1012.6	1012.8	2				IIIG
			WEIS				1054.7	1055.6	3				IIIGG
			BLEN				1054.9	1055.4	2				III,V,U
	1109	1142	WEIS				1114.4	1114.7	2				IIIG
	1200	1434	WEIS				1221.6	1221.9	2				IIIG
			WEIS				1224.5	1224.7	1				IIIB
			WEIS				1234.8	1236.6	2				IIIG
			WEIS				1254.7	1254.8	1				IIIB
			WEIS				1310.5	1310.7	2				IIIB
			WEIS				1319.1	1319.7	2				IIIG
	1339	2345	HARV				1339	2212	2				I
			HARV				1348	2243	2	1615	2005	2	IIIN
			WEIS				1348.1	1348.4	2				IIIG
			HARV				1351		3				IIIB
			BLEN				1351.2	1351.3	2				III
			HARV				1357		2				IIIG
			HARV				1415		3				IIIG
			WEIS				1415.3	1415.9	2				IIIG
			SGMR				1415.3	1415.4	1				III
			BLEN				1456.7	1502.9	3				IIIG,V
			HARV	1457	1503	3	1457	1503	3	1502	1503	1	IIIGG,V
			HARV				1514	1515	2				IIIG
			SGMR				1518.3	1518.4	1				III
			SGMR				1518.3	1518.4	1				III
			HARV	1519	1520	1	1519	1520	3	1519	1520	2	IIIG
			HARV				1653		2	1653		2	IIIG
			HARV				1714		2	1714		2	IIIG
			HARV				1742		2	1742		2	IIIG
			HARV				1757	1800	3				IIIG
			PALE				1800.4	1807.2	2				CONT
			HARV				1805	1809	3	1805	1809	2	IIIGG
			HARV				1854		2				IIIG
			HARV				1904	1905	2	1904	1905	2	IIIG
			PALE				1904.5	1904.8	2				III
			HARV	2011		1	2011		3	2011		2	IIIGG
	2016	2400	CULG	2016	2400	1							IN
			CULG				2016	2210	1				IS
			CULG				2016	2400					IIIS,W
			HARV				2020	2023	3	2020	2023	2	IIIG
			CULG				2020	2320	1				IIIN
			PALE				2021.9	2025.2	2				CONT
			CULG				2022	2023	2				IIIG
			CULG				2103	2104	2	2103	2103.5	1	IIIG,V
			HARV	2103		1	2103	2105	2	2103	2104	1	IIIG
			PALE				2103.2	2104.2	2				V
			HARV				2134	2135	2				IIIG
			PALE				2134.2	2135.1	2				III
			CULG				2134.5	2135	2				IIIG
			HARV				2138	2153	2				IIIGG
			CULG	2154	2155	2	2154	2156	3	2154	2156	3	IIIG,V

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
03			HARV	2154	2155	1	2154	2156	3	2154	2155	2	IIIGG,V
			PALE				2154.2	2156.2	2				V
			LEAR				2154.4	2155.4	1				CONT
			CULG				2210	2400	1				IS,C,DC
			HARV				2212	2335	2				IC
			HARV	2217		2							IIIG
			CULG	2217	2217.5	2							DCIM
			PALE				2238.4	2239.1	2				III
			LEAR				2238.5	2239.1	1				CONT
			CULG	2238.5	2239	1	2238.5	2239	3	2238.5	2239.5	2	IIIG
			HARV	2239	2239	1	2238	2239	2				IIIG
			LEAR				2240.5	1019.0	1				B
			LEAR				2240.5	1019.0	1				B
			HARV				2317	2322	2				IIIG
04			CULG	0000	0715	1							IN
	0000	0715	CULG				0000	0715	1				IS,C,DC
			CULG				0000	0255	1				IIIS
			LEAR				0008.0	0011.0	2				CONT
			PALE				0008.4	0010.6	1				CONT
			CULG				0008.5	0011	2	0009.5	0010.5	1	IIIGG
			CULG				0013	0255	2	0013	0447	1	IIIN
			CULG				0104	0535.5	1				DPN
			LEAR				0117.8	0118.8	2				CONT
			LEAR				0117.8	0188.8	2				CONT
			CULG				0118	0119	2	0118	0119		IIIG
			CULG				0142	0501.5	1				N,RSDP
			LEAR				0151.0	0153.8	3				CONT
			CULG	0152	0154	2	0152	0154.5	3	0152.5	0154.5	3	IIIGG
			PALE				0152.3	0154.2	2				CONT
			LEAR				0238.3	0256.3	2				S
			CULG				0238.5		3				IIIB
			CULG				0244.5	0245	3				IIG
			CULG				0255	0715	2				IIIS
			CULG	0510	0510.5	3	0510	0510.5	2				IIIG
			CULG	0513.5	0514	1							UNCLF
			LEAR				0550.4	0553.6	2				CONT
			CULG	0551	0553	3				0551.5	0552.5	2	IIIB,V
			LEAR				0624.8	0625.4	2				CONT
			CULG	0625	0625.5	3	0625	0625.5	3				IIIG
			LEAR				0644.9	0645.6	3				CONT
			CULG	0645		3	0645	0645.5	3				IIIB
	0650	1523	WEIS				0650	1523	3				IS,DC
			WEIS				0653	1523	2				IIIN
			LEAR				0715.0	0715.5	2				CONT
			BLEN				0850.0	1500	1				I,DC
			LEAR				0851.2	0852.1	2				CONT
			LEAR				0851.2	0852.1	2				CONT
			WEIS				0851.2	0852.1	3				IIIG
	0615	1500	BLEN				0851.5	0851.9	2				IIIG
			WEIS				1122.6	1123.1	3				IIIG
			WEIS				1158.9	1159.2	2				IIIG
			WEIS				1200.7	1202.4	2				IIIG
			WEIS				1205.8	1206.7	3				IIIGG
			SGMR				1205.9	1206.0	1				III
			BLEN				1205.9	1206.0	2				III
			SGMR				1205.9	1206.0	1				III
			BLEN				1210.4	1210.9	1				IIIG
			WEIS				1210.4	1211.0	3				IIIG
			WEIS				1300.3	1301.8	3				IIIGG
			BLEN				1300.4	1302.4	2				IIIGG
			WEIS				1330.8	1331.6	2				IIIG
	1339	2345	HARV				1339	2345	3				IC
			HARV				1414	2325	2	1626	2150	2	IIIS
			HARV	1444	1445	1	1444	1445	2				IIIGG
			HARV	1457		1	1457		2				IIIG
			WEIS				1457.2	1457.4	3				IIIG
			HARV				1533	1535	3	1533	1535	1	IIIGG
			HARV	1618	1620	1	1618	1621	3	1618	1620	3	IIIGG
			HARV	1629	2325	2							IIIN

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
04			HARV	1651	1652	2	1651	1652	2	1651	1652	2	IIIG
			HARV	1738	1740	2	1738	1740	2	1738	1740	2	IIIGG
			HARV	1759	1806	2	1759	1806	2	1759	1806	3	IIIGG
			PALE				1759.3	1806.5	2				CONT
			SGMR				1801.8	1805.8	1				CONT
			PALE				1824.5	1830.5	3				V
			SGMR				1824.5	1825.4	1				CONT
			HARV				1825		3	1825		3	IIIG,V
			HARV	1828	1833	3	1828	1833	3	1828	1833	3	IIIGG,V
			SGMR				1828.3	1830.0	2				CONT
			PALE				1830.5	0340.0	2				B
			HARV	1905		2	1905		2	1905		3	IIIGG
			HARV	1912	1918	2	1912	1918	2	1912	1918	3	IIIGG
			HARV	1929	1940	2	1929	1940	3	1929	1940	3	IIIGG
			HARV	1942	1951	3	1942	1952	3	1942	1951	3	IIIGG
			SGMR				1944.0	2110.0	2				B
			HARV	1949	1953	3	1949	1953	3				UNCL
			HARV	1956		1	1955	1956	2	1955	1956	3	IIIG
			HARV	2009	2022	2	2009	2022	3	2009	2020	3	IIIGG
			SGMR				2014.8	2017.3	2				CONT
			CULG				2017	2400	2				IIIS
			CULG	2017	2400	1							IS
	2017	2400	CULG				2017	2400	2				IS,C,DC
			CULG	2019	2400	2	2017	2400	3	2019	2400	2	IIIN
			HARV	2029	2033	2	2029	2033	2	2029	2033	2	IIIGG
			HARV	2041	2042	2	2041	2043	3	2041	2043	3	IIIGG
			PALE				2041.4	2041.9	3				III
			HARV	2051	2101	2							IIIGG
			HARV	2102	2106	2	2102	2107	3	2102	2107	2	IIIGG
			HARV	2127	2128	1	2127	2128	3	2127	2128	2	IIIG
			PALE				2137.9	2142.1	3				V
			HARV	2140	2143	2	2140	2143	3	2140	2143	3	IIIGG
			HARV	2154		3	2154		3	2154		2	IIIG
			LEAR				2155.0	1020.0	1				B
			HARV	2202		1	2202		2	2202		2	IIIG
			HARV	2212		1	2212		2	2212		2	IIIG
			LEAR				2221.7	2224.0	2				CONT
			HARV	2222	2224	1	2222	2224	3	2222	2224	2	IIIGG
			HARV	2236	2242	2							IIIGG
			LEAR				2254.0	2304.8	2				S
			CULG	2304	2312	1							N,DCIM
			HARV	2304	2319	2	2304	2319	2				IIIGG
			LEAR				2346.9	2347.6	3				CONT
			LEAR				2348.6	2351.1	2				CONT
05	0000	0715	CULG				0000	0715	2				IS,C,DC
			CULG	0000	0715	1							IN
			CULG				0000	0705	1				IIIS
			CULG	0001	0715	2							IIIN
			CULG	0010	0708	2	0010.5	0715	3	0008	0542	2	IIIN
			CULG				0031.5	0216	3	0031.5	0216	2	IIIG,V,N
	0649	1356	WEIS				0649	1429	2				IS
			WEIS				0707.2	0707.4	2				IIIG
	1400	1450	WEIS				0710	1450	2				CONT
			WEIS				0719.8	0720.4	2				IIIG
			WEIS				0722.1	0722.9	3				IIIG
	0620	1327	BLEN				0722.7	0722.8	1				III
			BLEN				0730	1327	2				I,DC
			BLEN				0730.8	0734.9	2				IIIGG
			WEIS				0731.9	0735.0	3				IIIG
			WEIS				0831.7	0837.0	3				IIIGG
			BLEN				0833.0	0836.7	3				IIIG,V
			WEIS	0836.0	0839.4	2							DCIM
			WEIS				1018.0	1020.5	3				IIIGG
			BLEN				1018.2	1020.8	2				IIIGG
			BLEN				1148.0	1154.4	3				IIIGG
			WEIS				1148.2	1153.6	3				IIIGG
			BLEN				1216.5	1217.6	2				IIIG
			WEIS				1216.7	1217.7	2				IIIG
			WEIS				1225.9	1226.3	2				IIIG

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DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
05			BLEN				1238.2	1239.9	2				III,U
			WEIS				1238.3	1240.3	2				DCIM
			WEIS				1240.9	1249.0	3			II	
			BLEN				1241.8	1251.9	3			II	
	1339	2340	HARV				1339	2350	3				IC
			HARV	1405	1502	1							IN
			HARV	1406	1407	2	1406	1407	2				IIIG
			WEIS				1406.6	1406.8	1				IIIG
			HARV	1429	1430	2							IIIG
			HARV				1535	1536	2	1535	1536	2	IIIG
			HARV				1619	2105	2	1619	2105	2	IIIS
			HARV							1828	1830	2	IIIG
			PALE				1828.1	1838.3	1				S
			HARV				1838		2	1838		2	IIIB
			HARV	1910		2							I
			PALE				1956.0	0337.0	2				B
			CULG				2016	2400	1				DP,N
			CULG				2016	2400	2				IS,C,DC
			CULG	2016	2400	1							IS
	2016	2400	CULG				2016	2400	2				IIIS
			CULG				2016	2400	1				RSDP,N
			HARV	2046		1							IIIG
			HARV				2105	2321	2	2105	2156	1	IIIN
			HARV	2124	2323	1							IN
			HARV				2133		2	2133		1	IIIB
			LEAR				2154.0	0000.0	1				B
			LEAR				2154.0	1021.0	1				B
			HARV				2209	2210	2				IIIG
			HARV				2228		2				IIIG
			CULG							2334	2338	1	RSDP,N
			CULG							2334.5	2354	1	IIIN
			LEAR				2348.7	2349.2	2				CONT
06			CULG				0000	0716	1				RSDP,N
	0000	0716	CULG				0000	0716	1				IIIS
			CULG				0000	0716	1				DP,N
			CULG	0000	0053	1							IS
			CULG				0000	0716	1				IS,C,DC
			CULG	0001	0002	2	0001	0004.5	2	0001.5	0004.5	2	IIIGG
			LEAR				0001.4	0005.8	2				CONT
			CULG				0001.5		3				IIIB
			CULG	0053	0716	1							IN
			CULG	0053	0716	1	0000	0648	2	0003.5	0443.5	1	IIIN
			LEAR				0111.4	0112.3	2				CONT
			CULG				0111.5		3	0111.5		1	IIIB
			CULG							0223	0407	2	IIIN
			LEAR				0258.0	0300.7	2				CONT
			LEAR				0341.7	0346.0	2				CONT
			CULG				0342	0344	2	0342	0344	1	IIIG,Z
			CULG				0342	0343.5	3				Z,N
			CULG	0358.5	0400	3	0358.5	0400	2	0358.5	0400	2	IIIG
			LEAR				0405.8	0407.1	2				CONT
			CULG				0406.5	0407	3	0406.5	0407	3	IIIB
	0651	1520	WEIS				0654	1519	2				IS,DC
			CULG	0706	0706.5	1	0706	0706.5	3				IIIG
	0700	1500	BLEN				0720 D	1500 E	1				I,DC
			WEIS				0724	1429	2				IIIN
			LEAR				0740.3	0741.2	2				CONT
			WEIS				0740.3	0747.8	2				IIIGG
	0700	1500	BLEN				0750.4	0752.7	3				IIIGG
			WEIS				0750.5	0753.2	3				IIIGG
			LEAR				0750.6	0752.8	3				CONT
			WEIS	0756.7	0756.9	1							IIIG
			BLEN				0756.7	0756.9	2				III
			BLEN				0809.9	0810.4	2				IIIG,V
			WEIS				0810.0	0811.2	2				IIIG
			LEAR				0810.0	0811.3	2				CONT
			BLEN	0830.2	0830.2	2	0830.2	0830.8	2				III
			WEIS				0830.2	0831.1	2				IIIG
			BLEN				0910.6	0911.1	3				V

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
06			LEAR				0912.4	0913.0	2				CONT
			WEIS				0912.4	0913.1	3				IIIG
			WEIS				0914.9	0915.0	1				IIIG
			WEIS				0918.7	0919.5	2				IIIG
			BLEN				0918.8	0919.3	1				V
			WEIS				0926.4	0926.6	2				IIIG
			WEIS				0930.7	0934.5	3				IIIGG
			BLEN				0930.7	0930.8	2				V
			BLEN				0932.1	0932.2	1				V
			LEAR				0933.0	0934.5	2				CONT
			BLEN				0933.1	0933.6	2				VG
			WEIS				0936.9	0940.3	3				IIIGG
			LEAR				0937.0	0938.6	2				CONT
			BLEN				0937.1	0938.5	3				IIIGG,V
			WEIS				1031.3	1032.3	2				IIIG
			BLEN				1036.1	1036.1	1				III
			WEIS				1036.9	1037.2	2				IIIB
			BLEN				1054.7	1103.4	2				IIIGG,I
			WEIS				1117.9	1118.4	2				IIIG
			WEIS				1155.3	1156.3	3				IIIG
			BLEN				1308.2	1318.8	2				IIIG
			WEIS				1314.7	1318.8	3				IIIGG
			SGMR				1316.2	1316.8	1				CONT
	1339	2335	HARV				1339	1520	2				IC
			HARV	1349		1	1349		2				IIIG
			BLEN				1349.1	1349.2	2				U
			HARV				1357	2336	2	1837	2012	2	IIIN
			WEIS				1444.2	1445.3	2				IIIG
			SGMR				1444.5	1445.0	1				V
			BLEN				1444.6	1445.0	2				V
			HARV	1445		1	1444	1445	3	1445		2	IIIGG,V
			HARV				1520	2335	2				IN
			SGMR				1543.8	1601.1	1				CONT
			HARV	1545	1550	1	1544	1549	3	1545	1549	2	IIIGG,V
			HARV				1554		2	1554		1	IIIG
			HARV				1558		2				IIIG
			HARV	1600	1601	2	1600	1605	3	1600	1605	2	IIIGG
			HARV				1612		3				IIIG
			HARV				1658	1659	3	1658	1659	1	IIIG
			HARV				1703	1704	3	1703	1704	2	IIIGG
			HARV	1731	1732	2	1731	1732	2				IIIG
			HARV	1804	2326	1							IN
			HARV	1932		1	1926	1933	2	1926	1933	2	IIIGG
			HARV				1948	1950	2	1948	1950	1	IIIGG
			HARV				1954		3	1954		2	IIIG
			HARV	1957	1958	2	1957	1958	2	1957	1958	2	IIIG
			HARV				2014		3	2014		3	IIIG
			PALE				2014.0	2027.0	2				S
			SGMR				2014.1	2021.0	1				CONT
			CULG				2016	2125	1				IS,C
	2016	2400	CULG				2016	2400					IIIS,W
			CULG	2016	2400	1							IS
			CULG				2016	2345	1				RS,DP,N
			CULG				2016	2347	1				RS,DC,N
			CULG				2017.5	2348	3				IIIG,N
			HARV				2018	2022	3	2018	2022	3	IIIGG
			HARV				2025	2027	2	2025	2027	2	IIIGG
			CULG				2032.5	2356	2	2059.5	2348	2	IIIN
			CULG				2032.5	2400	1				IIIN
			HARV				2044	2046	2	2044	2046	2	IIIG
			PALE				2044.5	2120.3	2				S
			CULG	2103	2345	1							IIIN
			HARV	2105	2104	1	2055	2105	3	2055	2105	2	IIIGG
			PALE				2114.0	2127.0	2				S
			HARV				2120		3	2120		2	IIIG
			CULG				2125	2400					IN,W
			HARV				2202	2203	2				IIIG
			PALE				2202.4	2202.7	1				III
			HARV	2238	2239	2	2239		1				IIIG
			HARV				2240	2241	3	2240		1	IIIGG

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DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
06			PALE				2240.2	2255.1	2				S
			LEAR				2240.3	2241.3	2				CONT
			LEAR				2244.7	2344.7	1				S
			HARV				2245		2				IIIG
			HARV				2254	2255	2				IIIGG
			LEAR				2315.0	1021.0	1				B
			HARV	2327		3							IIIB
			CULG				2333.5	2336.5	2	2334	2336	2	IIIGG
			LEAR				2333.6	2336.4	2				CONT
			PALE				2333.8	2355.5	2				S
			HARV	2334	2335	3	2334	2335	3				IIIG
			CULG	2334	2335	3							DCIM
			LEAR				2347.7	2348.2	2				CONT
07	0000	0715	CULG				0000	0715					IIIS,W
			CULG	0000	0715								IN,W
			CULG				0000	0715	1				IN
			CULG				0002	0700	2				IIIN
			CULG				0012	0715	1				RSDP,N
			CULG	0014	0019	3	0014	0019	3	0014	0019	3	IIIGG
			LEAR				0014.2	0019.0	3				CONT
			PALE				0014.2	0018.8	3				CONT
			CULG				0025	0029.5	1				II
			CULG				0031		3				IIIB
			CULG	0033.5	0325.5	1							DC,N
			CULG				0116	0715	1				DP,N
			LEAR				0156.3	0158.0	2				CONT
			CULG				0156.5	0158	3	0156.5	0158	1	IIIG
			PALE				0301.9	0303.4	2				CONT
			CULG	0302	0304	1	0302	0304	3	0302	0304	3	IIIGG,V
			LEAR				0302.0	0304.6	3				CONT
			LEAR				0310.0	0312.6	2				CONT
			CULG				0312	0313	3	0312	0312.5	1	IIIG
			CULG	0317	0317.6	3	0317	0317.5	3				IIIG
			LEAR				0317.3	0318.6	2				CONT
			CULG	0317.5	0320	3	0317.5	0320	1				IIIGG
			CULG	0329	0330								IIIG,W
			LEAR				0353.8	0359.6	3				CONT
			CULG	0354	0359.5	3	0353.5	0400	3	0353.5	0359.5	3	IIIGG,V
			CULG							0358	0405	1	SWF
			CULG				0400.5	0421	3	0405.5	0409	2	II
			LEAR				0401.0	0412.0	1				II
			LEAR				0401.0	0412.0	1				II
			CULG	0408	0408.5	1	0408	0408.5	1				IIIG
			CULG	0435.5	0436	2	0435.5	0436	1				IIIG
			WEIS				0657.4	0659.3	2				III,GG,DPR
			LEAR				0657.5	0659.3	2				CONT
	0653	1518	WEIS				0700	1518	2				IIIN
			WEIS				0703	1518	2				IS,DC
			LEAR				0714.9	0724.5	3				CONT
			WEIS				0714.9	0726.5	3				III,GG,DCI
			CULG				0715	0715.5	3				IIIG
			LEAR				0749.8	0751.9	2				CONT
			WEIS				0750.0	0751.6	2				IIIG
			WEIS				0807.6	0808.4	1				IIIG
			WEIS				0810.7	0811.3					IIIG,RS
			WEIS				0854.2	0854.3	2				IIIG
			WEIS				1003.8	1004.3	2				IIIG
	1020	1500	BLEN				1020 D	1500 E	1				I,DC
	1339	2340	HARV				1339	2337	2				IC
			HARV	1421	2039	1	1449	2340	2	1713	2040	2	IIIS
			HARV	1543	2325	1							INW
			HARV	1552	1600	2	1552	1600	3	1555	1556	2	IIIGG
			HARV				1700		2				IIIG
			HARV				1810	1812	2				IIIGG
			PALE				1821.5	1835.3	2				S
			HARV	1823	1830	2	1821	1830	3	1821	1828	2	IIIGG,V
			SGMR				1823.6	1824.4	1				CONT
			HARV	1834	1839	2	1834	1839	3	1834	1839	2	IIIGG
			CULG				2016	2400	1				IS,C,DC

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
07	2016	2400	CULG	2016	2035	1							IS
			CULG				2016	2110	1				IIIS
			CULG				2018	2211					RSDP,N
			CULG	2035	2400	1							IN
			HARV				2040	2335	2				IIIN
			CULG	2042	2045	2							DCIM
			CULG				2110	2400					IIIS,W
			LEAR				2153.0	0637.0	1				B
			PALE				2223.9	2224.5	1				III
			CULG				2225	2225.5	2	2225	2226	2	IIIG
			HARV				2225		3	2225		1	IIIG
			HARV				2236	2238	2				IIIGG
			CULG	2236	2353	2	2236	2335	2	2326.5	2346	1	IIIN
			HARV				2247	2248	2				IIIG
			HARV	2254	2255	1	2254	2255	3				IIIG
			CULG	2301	2301.5	2	2301	2302	3	2301.5	2302	3	IIIG
			HARV				2301	2304	3				IIIGG
			LEAR				2301.0	2304.2	2				CONT
			PALE				2301.2	2303.8	2				CONT
			CULG	2302.5	2303.5	2	2302.5	2304	3	2303	2304	3	IIIG
			LEAR				2329.6	2330.4	1				CONT
08			CULG				0000	0716					IIIS,W
			CULG	0000	0716	1							IN
	0000	0716	CULG				0000	0525	1				IS,C,DC
			CULG	0011	0700	1	0011	0716	1	0011.5	0430	1	IIIN
			CULG				0011.5		2				IIIN
			CULG							0318	0335	2	SWF
			CULG	0339	0344	2	0337.5	0344.5	3	0337.5	0344.5	3	IIIGG
			CULG	0356.5	0400	2	0356.5	0400	3	0356.5	0400	3	IIIGG,V
			CULG	0357	0359	3							DCIM
			CULG							0400	0407		SWF,W
			CULG				0400	0420	1				IS,C,DC
			CULG	0404	0405.5	2	0404	0405.5	2	0404	0405.5	1	IIIGG
			CULG	0415	0416	2	0415	0416	2				IIIG
			CULG				0525	0716	2				IS,C
	0700	1500	BLEN				0700 D	1500 E	3				I,DC
			BLEN				0800.6	0800.7	2				III
	0818	1517	WEIS				0818	1517	2				IS
			WEIS				0818	1517	3				PCONT
			WEIS				0925.6	0926.6	2				DCIM
			WEIS				1048.7	1053.8	2				IIIG
			WEIS				1057.4	1057.7	2				IIIB
			WEIS				1111.2	1112.1	2				IIIG
			WEIS				1336.2	1336.6	2				IIIB
	1337	2340	HARV				1337	1852	3				IC
			WEIS				1410.8	1412.8	3				IIIGG
			BLEN				1410.8	1412.2	2				III
			HARV	1411	1412	2	1411	1412	2				IIIGG
			HARV	1504	2312	1	1544	2253	2				IIIN
			HARV	1757		2							IIIB
			HARV				1852	2336	2				IC
			HARV	1927		3							I
			CULG	2016	2207	1							IS,C
			CULG				2016	2207	2				RSDP,N
	2016	2207	CULG				2016	2207	2				IS,C,DC
			CULG				2016	2207					IIIS,W
			CULG	2040	2207								IIIN,W
			CULG	2130	2137	2							IIIG,N
			HARV	2135	2137	2	2130	2137	2				IIIGG
			HARV	2221	2222	2	2221	2222	2				IIIG
			HARV	2250	2252	2	2250	2251	2				IIIG
			CULG	2257	2400	1	2257	2400	2				IS,C
			CULG				2257	2400	2				IIIS,W
	2257	2400	CULG				2257	2400	2				RSDP,N
09			CULG				0000	0634					IIIS,W
	0000	0634	CULG	0000	0634								IN,W
			CULG				0000	0634	2				IS,C
			CULG	0026	0617	2	0026	0617	2				IIIN

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
09			CULG	0026.5	0039.5	1							DCIM
			CULG				0029	0029.5	2				IIIB,Z
			CULG				0034	0043	2				II
			CULG	0439.5	0549.5	3							CONT
			WEIS				0659	1504	2				PCONT
	0652	1515	WEIS				0708	1511	2				IN
	0710	1500	BLEN				0710 D	1500 E	1				I,DC
			WEIS				0727.2	0727.8	2				IIIG
			WEIS				0753.2	0753.4	2				IIIG
			WEIS				0929.3	0930.4	3				IIIG
			WEIS				0932.0	0932.3	2				IIIG
			WEIS				0935.4	0936.5	3				IIIG
			WEIS				0946.6	0948.7	2				IIIG
			WEIS				1021.8	1023.3	2				IIIG
			WEIS				1242.2	1319.0	2				II HARMRS
			WEIS				1250.7	1251.5	2				IIIG
			WEIS				1253.7	1255.7	2				IIIG
			WEIS				1303	1324	2				CONT
			BLEN				1305	1324	2				C
	1358	2340	HARV				1406	2237	2				IIIN
			HARV				1410	2328	2				IN
			HARV				1613	1617	2	1605	1608	1	IIIG
			HARV				1750	1751	3	1750	1751	2	IIIG,V
			CULG				2018	2115					IIIS,W
	2018	2115	CULG				2018	2115	1				IS,C,DC
			CULG	2058	2100	1	2058	2100	2				IIIGG
			HARV				2058	2100	3	2058	2100	2	IIIGG
			CULG	2105.5	2106	1	2105.5	2106.5	3	2106	2106.5	2	IIIG,V
			HARV				2106		3	2106		2	IIIG,V
			HARV	2151	2152	2	2151	2153	2				IIIG
			CULG				2155	2400					IIIS,W
	2155	2400	CULG				2155	2400	1				IS,C,DC
			HARV				2232	2233	2				IIIG
			CULG	2232		1	2232	2233	2	2233	2233.5	1	IIIG
			HARV				2303	2304	3				IIIG
			CULG				2303	2305.5	3	2303.5	2304.5	3	IIIGG
			CULG	2317.5	2318	2	2317.5	2318	1				IIIG
			CULG	2318.5	2319	2	2318.5	2319	3	2318.5	2319	2	IIIG
			HARV				2319		3				IIIG
			CULG				2358		3				IIIB
10			CULG				0000	0716					IIIS,W
	0000	0716	CULG				0000	0336	1				IS,C
			CULG				0019	0317					RSDP,N
			CULG	0020	0716	1							IN
			CULG				0240	0240.5	3	0240	0240.5	2	IIIG
			CULG	0240.5	0243	1							DCIM
			CULG				0257	0257.5	2				IIIG
			CULG	0314	0314.5	2							DCIM
			CULG				0336	0716	1				IS,C,DC
			CULG				0350	0350.5	1				UNCLF
			CULG	0356	0357	2							IS
			CULG	0356	0357	2	0355.5	0357	3				IIIG
			CULG	0505.5	0510	3	0505.5	0507	2				IIIGG
			CULG				0538	0552	2				II
	1121	1515	WEIS				0701	1515	2				PCONT
	0701	1117	WEIS				0701	1515	2				IS,DP
	0714	1500	BLEN				0714 D	1500 E	1				I
			BLEN	0931.3	0934.5	1							DCIM
			WEIS				0931.4	0938.0	2				IIIGG
			BLEN				0935.2	0937.0	2				IIIG
			BLEN				1118.7	1118.9	1				IIIG
			WEIS	1358.6	1358.9	2							IIIG
			BLEN				1358.8	1358.9	3				III
	1406	2340	HARV				1406	1700	2				IC
			HARV				1603	1640	1				IIIN
			HARV	1615	1616	2	1615	1616	2				IIIG
			HARV	1622	1623	2	1622	1623	3				IIIG
			HARV				1640	2340	3	1755	2100	2	IIIS
			HARV				1700	2350	3				IC

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
10	2016	2400	CULG				2016	2400	2				IS,C,DC
			CULG	2016	2400	1							IS,C
			CULG				2059	2106	3				DC
			CULG				2102	2400	1				IIIN
			CULG				2104	2325	1				DP,N
			CULG				2119	2214	1				RSDP,N
			HARV	2143	2144	3							IIIG
			CULG	2149		3							IIIB
			HARV	2149		3	2149		3				IIIB
			CULG							2211	2400	1	IIIN
			CULG				2241.5		2	2241.5		1	IIIB
11	0000	0716	CULG	0000	0105	1							IS,C
			CULG				0000	0716					IIIS,W
			CULG				0000	0125	2				IS,C,DC
			CULG							0000	0716	1	IIIN
			CULG				0001	0716	1				DP,N
			CULG				0004	0716	1				IIIN
			CULG				0036	0716					RSDP,N
			CULG	0054	0055	3							IIIG
			CULG	0105	0716								IN,W
			CULG	0124	0706	1	0124	0706	2	0124	0705	2	IIIN
			CULG				0125	0716	1				IS,C
			CULG	0130	0131	2	0130.5	0131	3	0130	0132.5	3	IIIG,V
			CULG	0343.5	0344.5	2	0343.5	0344.5	2	0344.5	0345	1	IIIG,V
			CULG				0437.5	0440	3	0438	0440.5	2	IIIG,U
			CULG	0445.5	0447.5	1							DCIM CONT
			CULG				0456.5		3	0456.5		2	IIIB
			CULG				0505.5	0506	3	0505.5	0506.5	3	IIIG
			CULG				0527.5	0528.5	3	0528	0529	1	IIIG,U
			CULG	0643.5	0705	2	0559	0705.5	3	0559	0705.5	2	IIIG,N
	0702	1512	WEIS				0703	1419	1				IN
			WEIS				0704	1512	2				IIIN
			WEIS				0733.2	0735.2	3				IIIG
			WEIS				0805.8	0805.9	2				IIIB
			WEIS				0808.0	0809.2	2				IIIB
			WEIS				0840.2	0841.4	3				IIIG
			WEIS				0843.4	0844.0	3				IIIG
			WEIS				0849.2	0849.4	2				IIIB
			WEIS				0859.3	0901.7	3				IIIG
			WEIS				0928.7	0930.7	3				IIIG
			WEIS				1037.6	1038.2	2				IIIG
			WEIS				1040.9	1041.2	2				IIIG
			WEIS				1046.4	1047.7	2				IIIG
			WEIS				1126.2	1129.6	3				IIIGG
			WEIS				1133.6	1134.6	2				IIIG
			WEIS				1306.2	1306.7	2				IIIG
	1406	2300	HARV				1406	2300	2				IC
			HARV				1411	2300	2	1642	2203	2	IIIN
			WEIS				1432.7	1433.0	2				IIIG
			HARV				1433		3	1433		1	IIIG
			HARV				1445		2				IIIG
			HARV	1449	1451	2	1449	1451	2				IIIG
			WEIS				1455.7	1457.0	2				IIIG
			HARV				1456	1457	2				IIIG
			HARV				1534	1538	2				II
			HARV	1557	1558	1	1556	1557	3	1556	1557	1	IIIGG
			HARV				1604		2	1604		1	IIIG
			HARV				1622	1624	2	1622	1624	1	IIIGG
			HARV	1728	1729	2	1726	1730	2	1727	1730	2	IIIGG
			HARV	1803	1804	2	1803	1804	3	1803	1804	2	IIIG
			HARV				1812		2	1812		1	IIIG
			HARV	1830	1834	3	1828	1834	3	1828	1834	2	IIIGG
			HARV				1838	1846	2	1839	1844	2	IIIGG
			HARV				1854		2	1854		2	IIIG
			CULG	20			2017	2327					RSDP,N
			HARV	2016		2	2016	2017	2	2016	2017	2	IIIG
	2016	2400	CULG				2016	2400	2				IS,C
			CULG	2016	2400	1							IN
			CULG				2033	2400					IIIN,W

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11			CULG	2045	2212.5	2	2016	2353	2	2016	2353	1	IIIN
			CULG	2137.5	2203	1	2039	2350.5	1	2142.5	2353	2	IIIN
			HARV	2139	2140	2							IIIG
			LEAR				2152.0	1024.0	1				B
			HARV				2155		2				IIIG
			HARV	2159		3	2159		2				IIIG
			CULG	2203	2203.5	1	2203	2203.5	3	2203	2203.5	3	IIIB
			HARV				2203		2				IIIG
			HARV	2212	2214	2	2212	2213	2				IIIG
			CULG				2245	2246	3	2245	2246	3	IIIG
			HARV	2246		2	2246		2				IIIG
12	0000	0716	CULG				0000	0716	2				IS,C
			CULG	0000	0715	1							IN
			CULG	0000	0040								IS,W
			CULG	0005	0709	3							DCIM,N
			CULG	0024	0709	2	0024	0710	2	0024	0614	2	IIIN
			CULG				0056	0716	1				RSDP,N
			CULG				0115	0150	1	0114	0140	2	SWF
			CULG	0125	0126	2	0125	0126	3	0125	0126	3	IIIG
			CULG	0152	0153.5	2	0151	0154	3	0152	0157	3	IIIG,V
			CULG				0156	0220.5	3	0201.5	0204	2	II
			CULG	0338	0338.5	3	0338	0338.5	1				IIIG
			CULG	0342.5	0343	3	0342.5	0343	2				IIIG
			CULG	0343.5	0345	3	0344	0345	3				IIIG,Z
			CULG	0346.5	0347	2	0346.5	0347	3	0346.5	0347	3	IIIG
	0701	1307	WEIS				0708.0	0708.4	2				IIIG
			WEIS				0803.0	1	1				IN
			WEIS				0805.3	0805.5	2				U
			WEIS				0809.7	0811.2	2				IIIG
			WEIS	0809.8	0812.7	3							DCIM
			WEIS				0828.8	0828.9	3				IIIB
			WEIS				0851.2	0853.2	3				IIIG
			WEIS				0901.9	0904.8	2				IIIG
			WEIS				0908.3	0910.5	3				DCIM
			WEIS				0918.0	0918.4	1				IIIG
			WEIS	0925.6	0926.5	2							DCIM
			WEIS	0940.6	0940.9	2							DCIM
			WEIS				0940.7	0940.8	2				IIIG
			WEIS	0945.9	0949.8	3							DCIM
			WEIS				0946.3	0949.6	5				
			WEIS				0952.2	0955.3	3				IIIG
			WEIS				0953.3	0954.6	2				DCIM
			WEIS				0956.7	1001.6	3				IIIG
			WEIS				1009.4	1009.6	2				IIIG
			WEIS	1009.5	1009.7	2							DCIM
			WEIS	1016.7	1016.9	1							IIIG
			WEIS				1028.4	1028.5	2				IIIB
			WEIS	1058.3	1058.7	2							DCIM
			WEIS				1109.5	1110.2	2				DCIM
			WEIS	1131.4	1135.7	2							DCIM
			WEIS	1203.2	1216.0	2							DCIM
			WEIS				1221.2	1221.3	1				IIIB
			WEIS				1223.4	1231.5	3				IIIB
			WEIS				1237.3	1237.5	2				IIIG
			WEIS				1257.8	1258.2	1				IIIG
	1311	1511	WEIS				1317.5	1318.4	2				IIIG
			WEIS				1326.9	1327.3	2				IIIG
			WEIS				1337.2	1337.3	2				IIIG
			WEIS				1339.4	1340.6	2				IIIG
			WEIS	1345.5	1346.2	1							DCIM
			WEIS				1346.0	1346.6	3				IIIG
			WEIS				1348.8	1349.0	3				IIIB
			WEIS				1352.2	1354.3	3				IIIG
	1406	2345	HARV				1406	2400	2				IC
			HARV	1407	1700	1							IN
			HARV	1408		3							IIIG
			WEIS				1408.2	1408.7	2				RS
			WEIS				1416.8	1419.2	1				IIIG
			WEIS				1422.5	1422.7	1				IIIB

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
12			WEIS				1424.8	1424.9	1				IIIB
			HARV	1426	2054	2	1449	2317	2				IIIN
			WEIS				1428.7	1429.3	2				IIIG
			WEIS				1433.2	1433.4	2				IIIG
			WEIS				1447.8	1448.0	1				IIIB
			WEIS				1450.3	1459.4	3				IIIG
			HARV				1451	1454	3				IIIGG
			HARV	1457	1459	1	1456	1459	2				IIIGG
			HARV	1516	1525	2	1512	1528	2				IIIGG
			HARV	1559	1610	3	1600	1610	3	1602	1607	2	IIIGG
			HARV	1601	1604	3	1601	1604	3				UNCL
			HARV	1629	1631	3	1629	1630	2				IIIGG
			HARV	1636	1638	1	1634	1642	2	1634	1642	1	IIIGG
			HARV	1708		2	1708		2				IIIG
			HARV	1717	1719	2	1716	1721	2	1716	1717	2	IIIGG
			HARV	1723	1724	2	1723	1724	3	1723	1724	2	IIIG
			HARV	1737		2							IIIG
			HARV				1756		2	1756		2	IIIG
			HARV	1812	1818	2	1811	1820	3	1811	1820	2	IIIGG,V,U
			HARV	1813	1814	3	1815	1820	2				II
			HARV	1824		1	1824	1825	2	1824	1825	2	IIIG
			HARV	1831	1832	1	1831	1833	3	1831	1833	2	IIIG,V
			HARV	1837		1	1837	1838	3	1837	1838	2	IIIG,V
			HARV	1840	1841	1	1839	1841	2	1840	1841	2	IIIG
			HARV	1847	1848	3	1284.4	1849	3	1845	1848	2	IIIGG
			HARV	1852	1859	1	1852	1858	2	1852	1854	1	IIIGG
			HARV	1900		2	1900	1901	3	1900	1901	3	IIIG,V
			HARV	1902	1903	2	1902	1903	3	1902	1903	3	IIIGG,V
			HARV	1918	1920	2	1919	1920	2	1919	1920	2	IIIGG
			HARV	1922	1924	3	1922	1924	3				IIIGG
			HARV	1932		2	1931	1933	2	1931	1933	2	IIIG,V
			HARV	2005	2006	2	2005	2006	2	2005	2006	2	IIIG
			CULG				2016	2400					IIIN,W
	2016	2400	CULG				2016	2400	2				IS,C
			CULG				2019	2341	1				IIIN
			CULG				2032	2357					IIIN,W
			HARV	2040	2041	3	2040	2041	2				IIIG
			CULG	2040.5	2041	3							I
			CULG				2041	2150	1				RSDP,N
			CULG	2046.5	2353	3							DCIM,N
			HARV				2047	2049	3	2047	2049	2	IIIGG,V
			CULG				2047	2351	2				IIIN
			CULG	2047.5	2048	1	2046.5	2050	3	2047	2050	3	IIIG,V
			CULG	2056	2353	3	2056	2351	3	2057	2351	3	IIIN
			HARV	2057	2106	3	2056	2108	3	2057	2105	2	IIIGG
			CULG	2103	2349	3	2103	2349	3	2103.5	2349	3	IIIG,V,U
			HARV	2148	2157	2	2149	2157	3	2155	2154	2	IIIGG,U,V
			HARV				2159	2205	2				IIIGG
			CULG	2202	2242.5	1							DC,N
			HARV	2239	2240	2	2235	2240	2				IIIGG
			HARV	2242	2300	3							IIIGG
			HARV				2246	2248	3	2247	2248	1	IIIGG
			HARV				2309	2312	2				IIIGG
			HARV	2316	2326	2	2316	2323	2				IIIGG
			CULG				2353	2354.5	1				POSSII
13	0000	0716	CULG				0000	0716	1				IS,C
			CULG	0000	0650	1							IN
			CULG				0000	0712					IIIN,W
			CULG	0003	0716	3							DCIM,N
			CULG	0005	0650	2	0005	0651	2	0014	0611	2	IIIN
			CULG				0006	0716	1				DC,N
			CULG				0014	0713	1				IIIN
			CULG	0023	0530	2	0032.5	0645	3	0018	0624	1	IIIN
			CULG	0117	0656	3	0100.5	0656	3	0100.5	0656.5	3	IIIG,V,N
			CULG				0143.5	0145	3	0143.5	0145	3	IIIG,U
			CULG				0614.5	0629	2				II
	0705	1509	WEIS				0811	1508	2				IIIN
			WEIS				0852.4	0859.9	3				IIIGG
			WEIS				0956.2	0956.6	2				IIIG

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
13			WEIS				0959.9	1000.3	2				IIIG
			WEIS	1058.8	1103.7	3							DCIM
	1045	1500	BLEN	1058.8	1107	3							DCIM
			BLEN				1102.0	1109.0	3				IIIGG,V
			WEIS				1104.1	1109.1	3				IIIGG
			WEIS				1105.7	1108.8	1			II	
			BLEN				1105.9	1109.7	3			II	
			BLEN	1115.4	1115.6	2	1115.4	1116.0	2				III
			BLEN	1120.0	1145.0	2							DCIM
			WEIS				1122.4	1122.7	3				IIIB
			WEIS	1132.7	1134.0	2							DCIM
			WEIS				1203.1	1203.4	3				IIIG
			BLEN	1203.1	1203.4	1	1203.1	1203.4	2				IIIG,V,U
			BLEN	1222.3	1222.3	1	1222.3	1222.3	1				III
			BLEN				1246.1	1246.2	1				IIIG
			WEIS				1300	1321	1				IN
			BLEN	1351.9	1352.9	2							DCIM
			HARV	1403	2255	1							IN
	1351	2345	HARV				1403	2	2				IC
			BLEN				1403.7	1408.1	2				IIIGG
			HARV	1406	1408	2	1406	1408	2				IIIGG
			BLEN	1407.0	1408	2							DCIM
			HARV				1414	1417	2				IIIGG
			HARV	1426	2111	1	1424	2336	2				IIIN
			HARV				1435	1440	2				IIIGG
			BLEN				1455.2	1455.3	2				IIIG
			HARV				1504	1508	2				IIIGG
			HARV	1549		1	1548	1552	3				IIIGG
			HARV	1636	1639	2	1637	1641	2				IIIGG
			HARV	1648		2	1646	1649	2	1648		2	IIIGG
			HARV	1652	1656	2	1654	1655	3				IIIGG
			HARV	1752	1753	1	1752	1753	2	1752	1753	1	IIIG
			HARV				1803	1809	2				IIIGG
			HARV	1821	1825	1	1821	1825	2				IIIGG
			HARV	1827	1832	2	1827	1832	3	1828		1	IIIGG
			PALE				1827.7	1839.6	1				S
			HARV	1839		1	1839	1840	2	1839	1840	2	IIIG
			HARV				1846	1848	2	1846		1	IIIG
			HARV				1858		2	1858		1	IIIG
			HARV				1920	1925	2				IIIGG
			HARV				1927	1932	3	1927	1930	1	IIIGG
			SGMR				1927.2	1927.4	1				V
			HARV				1936	1939	2	1938		1	IIIGG
			HARV				2003	2009	2	2007		1	IIIGG
			PALE				2006.2	2056.8	1				S
	2016	2400	CULG				2016	2400	1				IS,C,DC
			CULG	2016	2400	1							IS
			CULG				2017	2359	2				IIIB,N
			CULG				2018.5	2355.5	1				IIIN
			CULG	2038.5	2357	2							DCIM,N
			HARV				2056	2057	2	2057		1	IIIB
			HARV				2101	2115	3				IIIGG
			PALE				2105.8	2143.2	1				S
			PALE				2105.8	2143.2	1				S
			PALE				2105.8	2143.2	1				S
			PALE				2105.8	2143.2	1				S
			CULG	2112.5	2113	3	2112.5	2113	3	2112.5	2113	2	IIIG
			CULG	2133	2134	2							DC
			HARV				2135	2136	2				IIIG
			HARV				2142	2148	2				IIIGG
			HARV				2151	2152	3	2151	2152	2	IIIGG,V
			CULG	2151	2152	3	2151	2153	3	2151	2152	3	IIIG,V
			PALE				2151.1	2153.3	3				V
			PALE				2151.1	2153.3	3				V
			PALE				2151.1	2153.3	3				V
			PALE				2151.1	2153.3	3				V
			LEAR				2151.2	2233.3	2				S
			HARV				2155	2200	2				IIIGG
			CULG	2156.5	2841	1							IIIN
			CULG	2202	2346.5	3							DCIM,N

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13			HARV				2202	2204	3	2202		2	IIIGG
			CULG	2202	2202.5	2	2202.5	2203	3	2202	2202.5	3	IIIG,Z
			PALE				2202.0	2203.2	2				V
			HARV				2224	2225	2				IIIGG
			CULG				2228.5	2229	3	2229		1	IIIG
			PALE				2228.5	2229.3	1				III
			HARV	2229		2	2228	2233	3				IIIGG
			HARV				2255	2256	2				IIIG
			LEAR				2255.3	2346.5	2				S
			PALE				2255.3	2311.9	1				S
			HARV				2311	2312	2				IIIG
			CULG				2315.5	2317	3	2316	2317	2	IIIG,V,Z
			PALE				2315.8	2316.9	2				V
			HARV				2316		3				IIIG,V
			HARV				2319	2322	2				IIIGG
			CULG				2331	2333	3	2331	2333	1	IIIG,V
			HARV				2332		2				IIIG
			PALE				2332.0	2359.8	2				S
			HARV				2339	2341	2				IIIGG
			CULG	2340.5	2341	1	2339	2341	3	2339	2341	3	IIIGG
			HARV				2344	2345	2				IIIGG
			CULG	2344	2345	2	2343	2345.5	3	2344	2345	2	IIIGG,Z
			CULG				2346.5		3	2346.5		1	IIIB
			CULG				2351	2356	2				II
			LEAR				2351.3	2356.7	2				II
			LEAR				2356.7	0309.9	1				B
			LEAR				2356.7	0309.9	1				B
			LEAR				2358.9	0002.3	2				CONT
			LEAR				2358.9	0002.3	2				CONT
			CULG				2359.5	2400	3	2359.5	2400	3	IIIB
14	0000	0716	CULG				0000	0225					IN,W,C
			CULG				0000	0706					IIIN,W
			CULG	0000	0701	1	0000	0708.5	1	0000	0458.5	1	IIIN
			CULG				0002	0705	2				IIIN
			LEAR				0052.9	0102.4	2				CONT
			CULG	0053	0632	2							DCIM,N
			PALE				0053.5	0102.0	2				CONT
			LEAR				0220.9	0224.9	2				CONT
			CULG				0225	0716					IS,W
			LEAR				0324.5	0324.8	2				CONT
			LEAR				0417.4	0418.8	3				CONT
			LEAR				0418.9	0506.0	2				S
			CULG	0420.5	0424.5	1	0417.5	0424.5	3	0417.5	0425	2	IIIGG,U
			CULG				0431	0435.5	1				II
			CULG	0501.5	0504	1	0500.5	0504	3	0500.5	0504	1	IIIG
			CULG	0508.5	0509	1	0508.5	0509.5	3	0508.5	0509.5	3	IIIG
			LEAR				0508.5	0509.7	3				CONT
			LEAR				0533.5	0541.4	3				CONT
			CULG	0534	0537.5	3	0534	0539	3	0534	0538.5	3	IIIGG,V
			CULG	0540	0545	3							DCIM,N
			CULG	0540	0540.5	3	0540	0541.5	3	0540	0541	2	IIIG,V
			CULG	0542	0542.5	2	0542	0542.5	3	0542	0542.5	3	IIIG
			LEAR				0542.0	0629.5	2				S
			CULG				0542.5	0552.5	2				II
			CULG				0544.5	0545	3	0544.5	0545	2	IIIG
			CULG				0627.5	0630	2	0628	0629	1	IIIG,V
			LEAR				0659.8	0705.1	2				CONT
			LEAR				0720.5	0731.5	1				S
	0707	1508	WEIS				0726	1501	2				IIIN
	0730	1500	BLEN				0753.4	0803.7	2				IIIGG
			LEAR				0754.0	0757.3	2				CONT
			WEIS				0755.3	0755.6	2				IIIB
			LEAR				0759.3	0803.1	2				CONT
			WEIS				0802.2	0802.9	3				IIIG
			WEIS				0820.2	0822.0	3				IIIG
			LEAR				0820.8	0823.2	2				CONT
			BLEN	0821.1	0821.2	2	0821.1	0821.4	2				IIIG,U
			WEIS	0821.6	0821.9	3							DCIM
			BLEN				0830.4	0830.8	2				III

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DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
14			LEAR				0830.5	0723.5	2				S
			WEIS				0830.6	0830.7	3				IIIG
			BLEN				0903.5	0904.4	1				III
			WEIS				0907.7	0908.3	2				IIIG
			BLEN				0907.8	0907.8	2				U
			LEAR				0932.6	0000.0	2				S
			LEAR				0932.6	0945.8	2				S
			WEIS				0943.1	0943.3	1				IIIG
			WEIS				0944.8	0948.2	2				IIIG
			BLEN				0944.8	0946.7	2				IIIG
			BLEN				0950.1	0950.2	1				III
			BLEN				1006.3	1006.6	2				III
			BLEN	1016.0	1028.1	2							DCIM
			BLEN				1103.6	1104.2	2				IIIG
			BLEN	1209.0	1209.3	2							DCIM
			BLEN				1217.4	1229.5	2				IIIGG
			BLEN				1249.0	1249.1	2				III
			BLEN				1301.5	1301.6	2				III
			BLEN				1303.9	1306.2	2				IIIG
			BLEN	1307.4	1311.8	2							DCIM
			WEIS				1337.9	1341.2	3				IIIGG
			BLEN				1339.9	1340.6	3				V
			SGMR				1339.9	1341.1	1				CONT
	1351	2345	HARV				1352	2159	2				IN
			WEIS				1353.7	1354.9	3				IIIG
			HARV				1354		2				IIIG
			SGMR				1354.3	1354.8	1				CONT
			HARV				1357		2				IIIGG
			HARV				1359	2332	2	1614	1855		IIIN
			HARV	1402	1407	2	1402	1413	3				IIIGG
			WEIS				1402.0	1403.6	3				IIIG
			BLEN				1402.1	1415.2	2				IIIGG
			WEIS				1405.7	1413.2	3				IIIG
			BLEN	1425.6	1425.7	2							DCIM
			BLEN				1426.1	1426.1	1				III
			BLEN				1455.1	1500 E	1				IIIG
			HARV	1459	1501	1	1459	1507	3				IIIGG,U
			WEIS				1501.5	1502.9	3				IIIG
			WEIS				1505.2	1505.9	3				IIIG
			HARV				1552	1554	2	1553	1554	2	IIIG
			HARV				1635		2	1635		2	IIIG
			HARV				1656		3	1656		2	IIIG
			HARV				1719	1721	2	1719	1721	1	IIIG
			HARV				1729	1734	2	1729	1734	1	IIIG
			HARV				1749	1751	2	1749	1751	2	IIIGG,V
			PALE				1749.5	1750.3	1				III
			HARV				1804	1808	2	1806	1808	1	IIIG
			PALE				1812.5	1813.3	1				III
			HARV				1912	1915	2	1912	1915	1	IIIG
			PALE				1912.7	1929.6	2				S
			SGMR				1917.7	1917.8	1				III
			HARV				1918	1921	2	1918	1921	2	IIIGG
			HARV	1927	1929	3	1927	1929	3	1927	1929	2	IIIGG
			HARV				2008	2009	2	2008	2009	1	IIIG
			PALE				2008.5	2016.1	2				CONT
			HARV				2014	2015	2	2014	2015	2	IIIG
	2016	2400	CULG				2032	2400	1				IN,DC
			CULG				2101.5	2343	2	2118	2335	2	IIIN
			PALE				2103.5	2156.7	2				S
			HARV	2104		1	2101	2104	2	2104		1	IIIG
			HARV				2113	2138	2	2118	2135	2	IIIGG
			HARV	2141	2142	2	2139	2144	3	2140	2143	2	IIIGG
			CULG	2142.5	2143	2	2140.5	2144	2	2141.5	2142	2	IIIGG
			HARV				2148	2152	2				IIIGG
			LEAR				2151.0	0305.0	1				B
			HARV	2155	2206	2	2155	2206	2	2156	2206	2	IIIGG
			CULG	2155	2205	1	2157	2230	2				CONT
			HARV	2155	2206	2	2155	2216	2			IV	
			CULG	2156	2156.5	1							DCIM
			CULG	2156	2156.5	1	2156	2156.5	2				IIIG

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
14			HARV				2159	2234	2				IC
			CULG				2204	2220	2				II
			HARV				2204	2211	2				II
			PALE				2205.4	2245.0	2				B
			CULG				2205.5		3	2205.5		1	IIIB
			HARV				2314	2315	2				I
			LEAR				2333.8	2336.8	2				CONT
			HARV				2335		2				IIIG
			CULG	2351.5	2152	2							DCIM
15			CULG		2101.5	1							IIIG
	0000	0716	CULG				0003	0651	1				IIIN
			CULG				0005	0305	2				IN
			CULG	0106	0109	2							DCIM
			CULG				0134	0136.5	2	0134	0136.5	2	IIIGG,V
			CULG	0135.5	0140	1							I,DC
			CULG				0139	0142.5	2	0139	0142.5	1	IIIG
			CULG				0140	0145	1				II
			CULG				0217	0217.5	2				IIIG
			CULG	0302.5	0303.5	1	0302.5	0304	2	0302.5	0303.5	2	IIIG
			LEAR				0302.5	0304.4	2				CONT
			CULG	0304.5	0305.5	2							DCIM
			CULG	0609	0617	2							DCIM,N
	0707	0843	WEIS				0746.4	0749.9	1				IIIG
	0740	1403	BLEN				0746.6	0802.1	2				IIIGG,RS
			WEIS				0755.2	0757.8	2				DCIM
			WEIS				0814.2	0814.8	1				IIIG
			BLEN				0814.2	0814.4	2				U
			WEIS				0819.6	0821.5	1				IIIG
			BLEN				0819.6	0819.6	1				III
			BLEN				0917.5	0920.5	2				IIIGG,U
			BLEN				1026.4	1033.4	2				IIIG,U
			BLEN	1041.2	1041.2	1							DCIM
			BLEN	1041.5	1044.2	1	1041.5	1044.2	1				IIIGG
			BLEN	1100.6	1100.9	1							DCIM
	1148	1305	WEIS				1148.0	1149.8	2				IIIG
			BLEN	1149.2	1149.5	1							DCIM
			WEIS				1153.2	1154.0	2				IIIG
			BLEN				1155.8	1201.2	1				I
			BLEN				1206.1	1208.5	3				IIIGG
			WEIS				1206.6	1207.7	2				IIIG,RS
			WEIS				1303.8	1304.9	1				IIIG
			BLEN				1303.9	1303.9	2				III
			BLEN	1311.6	1320.0	2	1309.7	1320.0	3				IIIGG,RS,U
	1351	1618	HARV				1409	1609	1				IN
			HARV	1420	1423	2	1420	1424	2				IIIGG
			SGMR				1423.7	1428.6	1				CONT
			HARV	1424		3	1424	1429	3				II
			HARV				1431	1435	2				IV
			HARV	1432	1437	2	1432	1437	2				IIIGG
			HARV				1517	1522	2				IIIGG
			HARV				1544		1				IIIGW
			PALE				1814.4	1830.3	1				S
	2017	2400	CULG				2018		1				IIIB
			CULG	2106		1	2106		2				IIIB,U
			PALE				2106.3	2126.3	1				S
			CULG				2126		2	2126		2	IIIB
			CULG				2216	2223	1				IIIN
16	0000	0716	CULG				0038		1				IIIB
			CULG				0041.5	0042	2				IIIG
			LEAR				0041.8	0043.5	1				CONT
			CULG	0042.5		1	0042.5	0043	1				IIIG
			CULG				0441.5		1				IIIB
			LEAR				0802.0	0802.9	1				CONT
	0733	1504	WEIS				1106.3	1106.7	2				U
			WEIS				1304.9	1307.8	1				IIIG
			WEIS				1312.2	1313.1	2				IIIG
	1351	2235	HARV				1407	223.0	2				IIIN
			WEIS				1453.8	1457.0	1				IIIG

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
16			HARV				1454	145.6	2				IIIGG
			HARV				1557	223.0	1				IN
			HARV				1612		2				IIIG
			HARV	1723	1726	1							I
			HARV				1746	1748	3	1746			IIIG
			HARV				1843	1846	3	1843	1846	2	IIIGG
			HARV				1849	1853	2	1849	1853	2	IIIG
	2017	2400	CULG				2027	2259	2				IIIN
			CULG	2103.5	2129.5	1	2027.5	2300	1				IIIN
			CULG	2127.5		2	2127.5		2				IIIB
			PALE				2129.2	2129.4	1				III
			LEAR				2250.4	2300.4	1				CONT
17			CULG	0023.5	0024	1	0023.5	0024	2				IIIG
			CULG				0126.5	0649.5	1				IIIN
			CULG				0236.5		2	0236.5		2	IIIB
			CULG	0321		1	0321		2	0321		2	IIIB
			CULG	0327.5	0329.5	2	0326	0333	2	0327	0333	1	IIIGG
			CULG				0506.5	0512	2	0506.5	0512	1	IIIGG
	0729	0946	WEIS				0731.0	0734.2	2				IIIG
			WEIS				0739.9	0740.5	1				IIIG
			WEIS				0759.8	0800.0	2				IIIB
			WEIS				0818.2	0818.3	1				IIIG
			WEIS				0821.8	0822.0	1				IIIG
			WEIS				0830.7	0831.3	3				IIIG
			WEIS				0857.8	0858.0	2				IIIB
			WEIS				0903.4	0904.9	1				IIIG
			WEIS				0912.4	0913.0	2				IIIG
	0900	1450	BLEN				0912.4	0921.4	2				IIIGG
			WEIS				0916.2	0917.0	2				IIIG
			WEIS				0921.0	0922.3	2				IIIG
			WEIS				0929.0	0930.3	1				IIIG
			BLEN	0929.7	0929.7	1	0929.1	0929.7	2				III
			WEIS				0932.1	0932.4	1				IIIG
			BLEN				0941.2	0942.6	1				IIIG
			WEIS				0941.7	0942.0	1				IIIG
			WEIS				0945.3	0945.4	1				IIIB
			BLEN				1000		1				I
			BLEN				1000.2	1000.5	1				III
			BLEN				1010.1	1016.2	2				IIIGG
			BLEN				1038.3	1038.7	2				IIIG
	1100	1324	WEIS				1142.9	1147.0	1				IIIGG
			BLEN				1153.2	1158.3	2				IIIG
			WEIS				1153.3	1156.6	2				IIIGG
			WEIS				1230.1	1232.8	2				IIIG
			WEIS				1237.6	1240.2	1				IIIG
			BLEN	1238.3	1243.7	2	1238.3						DCIM
			WEIS				1242.4	1244.3	3				IIIG
			BLEN				1249.2	1243.4	2				IIIG
			WEIS				1311.6	1312.7	2				IIIG
			WEIS				1322.3	1323.7	1				IIIG
	1338	1504	WEIS				1355.2	1355.5	1				IIIG
			WEIS				1407.7	1410.7	1				IIIG
			WEIS				1452.6	1454.1	1				IIIG
			WEIS				1500.4	1501.7	2				IIIG
	2017	2400	CULG	2017	2327	1	2017	2327	1				IS,DC
			CULG				2017	2400					IIIN,W
			CULG				2021.5	2358	1				IIIN
	0000	0717	CULG	2022.5	0644.5	1							IN
			CULG				2023.5	2358	2				IIIN
			CULG	2136	2206	1	2135	2206	3	2136	2206	2	IIIGG,N
			CULG	2136	2316	3							DCIM,N
			LEAR				2235.4	0216.0	1				B
			LEAR				2235.4	0216.0	1				B
			LEAR				2302.9	2303.6	1				CONT
			CULG				2327	2400	1				IN
			LEAR				2356.0	2357.7	2				CONT
18			CULG				0000	0716	1				IIIN
	0000	0716	CULG	0028	0512.5	1	0000	0715	2				IN,DC

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
18			LEAR				0028.2	0039.2	2				CONT
			CULG				0028.5	0652	2				IIIN
			LEAR				0035.9	0039.2	2				CONT
			CULG	0111	0605	3							DCIM,N
			CULG	0111	0112	2	0111	0113	3	0111	0112	2	IIIG,V
			LEAR				0111.1	0112.9	3				CONT
			LEAR				0116.8	0129.3	2				S
			CULG				0117	0129	2	0120	0125	2	IIIGG
			LEAR				0146.8	0148.2	2				CONT
			LEAR				0208.7	0211.5	2				CONT
			LEAR				0233.5	0234.4	1				CONT
			LEAR				0303.8	0335.0	2				S
			CULG	0414	0416.5	1	0413.5	0417	3	0414	0416	2	IIIGG
			LEAR				0414.4	0416.9	3				CONT
			LEAR				0414.4	0416.9	3				CONT
			LEAR				0416.9	0423.0	2				CONT
			LEAR				0416.9	0423.0	2				CONT
			LEAR				0423.0	1028.0	1				B
			LEAR				0451.0	0452.7	2				CONT
			LEAR				0451.0	0452.7	2				CONT
			LEAR				0507.7	0605.0	1				S
			LEAR				0507.7	0605.0	1				S
			LEAR				0507.7	0605.0	1				S
			LEAR				0625.2	0716.1	1				S
			LEAR				0648.8	0652.3	2				CONT
			LEAR				0648.8	0652.3	2				CONT
	0711	1502	WEIS				0715	1454	2				IIIN
			LEAR				0727.5	0741.0	1				S
	0730	1500	BLEN				0730 D	1500 E	1				I
			WEIS				0824.8	0829.7	3				IIIGG
			BLEN				0825.0	0827.7	2				IIIGG
			LEAR				0825.3	0829.2	3				CONT
			LEAR				0902.1	0921.8	1				S
			BLEN				0907.2	0912.8	2				IIIGG,V
			WEIS				0907.3	0911.6	2				IIIG,U
			BLEN	0911.3	0911.7	1							DCIM
			BLEN				1001.2	1001.4	1				III
			WEIS				1100.7	1102.1	3				IIIG
			BLEN	1100.9	1101.8	1	1100.8	1101.8	2				IIIG
			BLEN				1134.3	1136.6	2				IIIG
			BLEN	1134.4	1135.3	1							
			BLEN				1214.0	1214.4	2				IIIG
			BLEN				1226.2	1226.3	1				III
			BLEN				1301.2	1301.9	2				IIIG
			BLEN	1303.6	1306.3	2							
			BLEN				1346.2	1347.2	1				IIIG
			WEIS				1414.8	1416.5	3				IIIGG
			BLEN				1414.9	1416.2	1				IIIG
			BLEN				1420.5	1452.9	2				IIIGG
			SGMR				1427.8	1430.9	1				CONT
			SGMR				1427.8	1430.9	1				CONT
			BLEN	1430.7	1430.8	1							DCIM
			SGMR				1452.9	1453.4	1				V
			SGMR				1452.9	1453.4	1				V
	2017	2400	CULG	2028	2128	1							DC,N
			CULG				2030	2359	1				IIIN
			CULG				2033		2				IIIB
			CULG				2038.5	2043.5	1				IIIGG
			CULG				2057.5	2130	1				IS
			CULG				2242	2350	1				IN
			LEAR				2253.3	2352.3	1				S
			LEAR				2253.3	2352.3	1				S
			LEAR				2314.0	1028.0	1				B
			LEAR				2314.0	1028.0	1				B
			CULG				2327	2359.5	2				IIIS
			CULG				2328	2353	2				POSSII
			LEAR				2330.2	2331.4	2				CONT
			LEAR				2330.2	2331.4	2				CONT
			CULG	2347	2350	2							DCIM,N
19	0000	0717	CULG				0009	0714					IIIN,W

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19			CULG				0038.5	0622.5	1				IIIN
			CULG				0230	0246	2				II
			LEAR				0230.7	0256.7	1				II
			LEAR				0230.7	0246.7	1				II
			LEAR				0230.7	0256.7	1				II
			LEAR				0317.5	0319.4	2				CONT
			LEAR				0317.5	0319.4	2				CONT
			CULG				0319		2	0319		2	IIIB
			CULG				0400	0717	1				IS
			CULG	0400	0645	1							IN
			LEAR				0537.6	0538.4	2				CONT
			LEAR				0537.6	0538.4	2				CONT
			CULG				0538		2				IIIG,V
			CULG				0641		2				IIIB
			LEAR				0641.2	0641.4	1				CONT
			LEAR				0641.2	0641.4	1				CONT
	0730	1500	BLEN				0730 D	1500 E	1				I
	0813	1457	WEIS				0829	0914	2				IIIS
			WEIS				1021.7	1021.9	2				IIIB
			WEIS				1023.3	1026.3	2				IIIG,U
			BLEN	1048.8	1048.9	1							DCIM
			WEIS				1049.0	1116	1				IIIS
			WEIS				1157.7	1157.8	1				IIIB
			WEIS				1243.0	1244.5	1				IIIG
			WEIS				1254.6	1255.2	2				IIIG
			BLEN				1254.6	1255.1	2				IIIG
			WEIS				1257.3	1300.8	2				IIIG
			BLEN				1300.1	1300.3	1				III
			WEIS				1304.0	1351	2				IIIS
			CULG				2018	2400					IIIN,W
	2018	2400	CULG				2018	2400					IN,W
			CULG				2034.5	2035.5	1				IIIG,Z
			CULG				2054	2204	1				IIIB,U
20	0000	0718	CULG				0018.5	0718					IIIN,W
			CULG				0039	0718	1				IN
			CULG				0039	0713	1				IIIN
			LEAR				0043.6	0105.6	1				S
			LEAR				0043.6	0105.6	1				S
			LEAR				0144.6	0145.2	1				CONT
			LEAR				0144.6	0145.2	1				CONT
			CULG				0341	0713					IN,W
			CULG				0348	0350	2	0348	0349	1	IIIGG
			CULG	0448	0545	1							IN
			LEAR				0520.4	0526.2	2				CONT
			LEAR				0520.4	0526.2	2				CONT
			CULG				0520.5	0521	3	0520.5	0521	2	IIIB
			LEAR				0527.0	0930.0	1				B
			LEAR				0544.5	0614.8	2				S
			LEAR				0544.5	0614.8	2				S
			CULG				0544.5	0713	2				IIIN
			CULG	0545	0718	1							IS
			LEAR				0620.2	0622.4	2				CONT
			LEAR				0620.2	0622.4	2				CONT
			CULG				0621.5	0622.5	3	0622	0622.5	1	IIIG
			LEAR				0712.7	0714.5	2				CONT
			LEAR				0712.7	0714.5	2				CONT
			CULG				0713.5	0714.5	3				IIIG
	0715	0737	WEIS				0727	1458	2				IIIN
			LEAR				0727.2	0730.2	2				CONT
	0730	1500	BLEN				0730 D	1500 E	2				I,DC
			LEAR				0746.2	0747.3	2				CONT
			BLEN				0813.7	0813.8	2				III
			LEAR				0823.7	0825.9	2				CONT
			BLEN				0858.1	0858.3	2				III
			BLEN				0904.8	0905.4	1				III
			BLEN	0931.1	0931.4	1	0931.1	0931.4	2				III
			BLEN				1025.2	1025.9	1				IIIG
			BLEN	1029.9	1032.8	1	1029.9	1032.8	1				IIIG
			BLEN				1037.7	1043.5	2				III

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
20	0744	1459	WEIS				1037.8	1038.1	2				IIIG
			WEIS				1041.2	1043.6	2				IIIGG
			WEIS				1144.0	1146.8	3				IIIG
			BLEN	1145.3	1145.8	2	1145.3	1146.1	2				III
			WEIS				1353.3	1353.4	3				IIIB
			WEIS				1410.2	1414.1	2				IIIG
			BLEN				1412.1	1412.8	1				IIIG
			SGMR				1412.4	1412.7	1				V
			WEIS				1422.7	1423.3	3				IIIG
			BLEN				1427.7	1423.3	2				IIIG
			BLEN				1441.3	1443.2	2				IIIG
			WEIS				1441.3	1443.3	3				IIIG
			SGMR				1528.6	1530.1	1				CONT
			HARV				1603	1604	2	1603	1604	1	IIIG
			HARV				1850	1853	3	1850	1853	2	IIIG
			HARV				1932	1944	3	1932	1944	2	IIIG
			SGMR				1939.5	1940.6	1				CONT
			HARV				2012	2013	3	2012	2014	2	IIIG
	2018	2400	CULG				2018	2348					IIIN,W
			CULG				2029	2226	1				IIIN
			HARV				2032	2041	2	2032	2041	2	IIIG
			CULG				2033	2246	2				IIIN
			CULG	2037.5	2038.5	2							DCIM
			HARV				2117	2119	3	2118	2119	2	IIIG
			CULG				2118.5	2246	3	2118	2246	1	IIIN
			HARV				2146	2147	3	2147		1	IIIGG
			LEAR				2216.7	2246.1	1				S
			CULG				2217		2				IIIB,Z
			HARV				2245	2246	3				IIIG
21	0000	0718	CULG				0140	0715					IIIN,W
			LEAR				0140.9	0142.5	1				CONT
			CULG	0141	0144	1							IN
			LEAR				0202.7	0244.5	1				S
			CULG				0238		2				IIIB,V
			CULG				0243		1	0243		1	IIIB
			CULG	0349	0349.5	2							DCIM
			CULG				0434.5	0435	2	0434.5	0435	1	IIIB,V
			LEAR				0434.6	0435.2	2				CONT
			LEAR				0559.3	0559.9	1				CONT
			CULG				0559.5		1				IIIB,V
			CULG				0633.5		1				IIIB
			LEAR				0633.5	0634.1	1				CONT
			LEAR				0633.5	0634.1	1				CONT
	0716	1500	WEIS				0724.4	0725.4	2				IIIG
	0730	1500	BLEN										
			LEAR				0758.5	0759.0	1				CONT
			WEIS				0758.7	0758.9	2				IIIB
			WEIS				1125.5	1125.8	1				IIIG
	1345	2340	HARV				1606		2				IIIG
			HARV				2102		1				IIIGW
	2018	2400	CULG	2102	2102.5		2102	2102.5					IIIG,W
			CULG	2245	2246	1	2245	2246.5	2	2245	2246.5	2	IS
			HARV				2245		2				IIIB
			LEAR				2245.2	2245.4	1				CONT
			CULG				2245.5		2	2245.5		1	IIIB
			HARV				2310	2311	1				IIIG
			CULG	2310.5	2311		2310.5	2311					IIIG,W
22	0000	0718	CULG				0008	0718					IIIN,W
			CULG				0136		1	0136		1	IIIB
			LEAR				0136.0	0142.1	1				CONT
			CULG				0141.5	0142	2	0141.5	0142.5	1	IIIG
			CULG				0157.5	0158	1	0158	0158.5	1	IIIB
			LEAR				0157.7	0158.3	1				CONT
			LEAR				0209.9	0210.3	1				CONT
			CULG	0240.5	0246	2							DCIM
			LEAR				0322.3	0323.6	3				CONT
			CULG	0322.5	0323	3	0322.5	0323.5	3	0322.5	0323	3	IIIG,V
			CULG							0323.5	0332	1	SWF

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
22			LEAR				0426.9	0427.6	2				CONT
			CULG				0427	0427.5	3	0427	0427.5	3	IIIB
			LEAR				0508.9	0509.5	1				CONT
			CULG	0626.5	0627	3							I
			CULG	0656	0718	1							CONT
			CULG	0656	0718	2							DCIM
			CULG	0657.5	0705	2							IIIGG,U
			CULG				0658	0718	2				IN
			CULG				0703.5	0710	1				IIIN
			LEAR				0729.2	0743.5	1			II	
			WEIS				0741.7	0742.8	2				IIIG
			LEAR				0743.5	0830.0	1			IV	
	0739	1500	BLEN	0747.1	0749.3	1							DCIM
			BLEN	0756.5	0830	3	0756.5	0830	3			IV	F,P
	0718	1324	WEIS				0757.5	0829.0	3			IV	
			WEIS				1010.8	1010.9	1				IIIB
			WEIS				1029.2	1029.4	2				IIIG
			WEIS				1033.9	1034.1	1				IIIB
			WEIS				1109.8	1110.0	2				IIIB
	1333	1458	WEIS										
	1400	2016	HARV				1509	1510	3	1509	1510	1	IIIG,V
			HARV				1638		2	1638		2	IIIG
			HARV				1721	1722	3	1721	1722	2	IIIG
	2018	2400	CULG				2042.5	2043	3				IIIB
			CULG	2153.5	2155	1							IN
			CULG				2349						IIIB,W
23	0000	0718	CULG				0547	0549	3				IIIG,V
			LEAR				0547.4	0549.3	2				V
			CULG				0552	0554					IIIN,W
	1330	1500	BLEN										
	0719	1457	WEIS				1336.2	1336.8	1				IIIG
	1400	2340	HARV				1411		1				IIIB
	2018	2400	CULG				2041	2400					IIIN,W
			HARV				2052		1				IIIBW
			HARV				2121		1				IIIBW
			HARV				2124		2	2124		1	IIIB
			CULG				2124		2	2124		1	IIIB
			CULG				2135	2141	1				DC
			HARV				2136	2139	2				IW
24	0000	0718	CULG				0010.5	0122					IIIN,W
			LEAR				0114.9	0115.5	1				CONT
			CULG				0115		2	0115		2	IIIB
	0721	1249	WEIS										
	0740	1440	BLEN										
	1400	2340	HARV				1605		1				IIIBW
			HARV				1618		1				IIIBW
			HARV				1622		1				IIIBW
			HARV				1649	1650	1				IIIGW
			HARV				1839		1				IIIB
	2041	2400	CULG	2053.5	2054	2							DCIM
			HARV				2220	2221	1				IIIB
			HARV				2226		1				IIIB
			CULG	2234	2400								IN,W
			HARV				2240		1				IIIBW
			HARV				2315	2317	1				IIIGW
			HARV				2324		1				IIIBW
			CULG	2338	2344.5	2							DC
25	0000	0718	CULG	0201.5	0302	1							IN
			CULG	0302	0718								IS,W,DC
			CULG				0431	0500	1				IS,DC
			CULG				0520	0556	1				IN
			CULG				0520.5	0521	1				IIIG,U
			CULG				0523.5	0540.5	2			II	H
			CULG	0644.5	0645	1	0644.5	0645	1				IIIG
	0713	1126	WEIS				0742.2	0745.6	1				IIIG
			WEIS	0748.1	0758.6	1							IIIG
			WEIS				0810.4	0811.9	3				IIIG

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
25	0740	1440	BLEN				0810.7	0811.9	2				IIIG
			BLEN				0825	1050	2				I,NS,DC
			BLEN				0950	1001.1	2				IIIGG
			WEIS				0951.5	1000.8	2				IIIGG
			WEIS				1200.6	1211.7	2				IIIGG
	1131	1339	WEIS				1204.2	1205.3	2				IIIG
			BLEN	1210.6	1213.0	1	1203.8	1212.8	2				IIIGG
			BLEN				1223.7	1223.8	1				U
			WEIS				1223.8	1223.9	2				IIIB,RS
			BLEN				1250.3	1315	1				I,DC
	1400	2340	HARV				1408		1				IIIBW
	1415	1455	WEIS										
			HARV				1524		1				IIIBW
			HARV				1817	1818	3				IIIG
			HARV				1823	1825	3			II	
			HARV				1944		1				IIIBW
	2019	2400	CULG	2019	2120	5							IN,W
			CULG				2026	2334					IIIN,W
			CULG	2120	2202	2							IS
			CULG	2202	2256								IN,W
26			LEAR				0110.8	0111.2	2				CONT
	0000	0719	CULG				0111		2				IIIB
			CULG				0112	0113	1				IIIG
			CULG	0137.5	0138	1							I
			CULG				0138						IIIB,W
			CULG				0419	0657	1				IIIN
			CULG				0426	0657					IIIN,W
			LEAR				0436.2	0442.2	1				CONT
			CULG				0442	0714.5	2				IIIN
			LEAR				0449.2	0452.9	1				CONT
			LEAR				0449.2	0452.9	1				CONT
			LEAR				0550.0	0623.4	1				S
			LEAR				0645.2	0648.4	2				CONT
			LEAR				0655.8	0728.8	1				S
	0724	1454	WEIS				0736.9	0737.1	2				IIIG
	0740	1440	BLEN				0823.2		1				I
			BLEN				0829.2	0831.6	2				IIIG,U
			BLEN				0847.9	0849.4	2				III
			WEIS				0849.4	0850.2	3				IIIG
			LEAR				0849.5	0850.3	3				CONT
			WEIS				1009.2	1011.4	3				IIIG
			LEAR				1009.8	1011.3	1				CONT
			BLEN				1013.9	1015.8	2				IIIGG
			WEIS				1014.3	1015.7	3				IIIGG
			BLEN				1022.9	1023.4	1				III,U
			WEIS				1056.3	1059.3	3				IIIGG
			BLEN				1056.3	1058.5	1				III
			WEIS				1217.1	1217.2	1				IIIG
			BLEN				1257.8	1440 E	1				I,DC
			WEIS				1325.3	1326.1	1				IIIG
			WEIS				1403.2	1403.5	1				IIIB
	1400	2335	HARV				1404	2044	1				IN
			WEIS				1405.6	1405.8	1				IIIB
			HARV				1509	1510	3				I
			HARV				1615	1622	2				IIIGG,U
			HARV				1630	1632	2				INCL
			HARV				1759	1805	2	1802	1803	2	IIIGG
			HARV				1942		2				IIIG
	2020	2400	CULG	2020	2205	1	2045	2120	1				IS,DC
			CULG				2022	2116					IIIN,W
			HARV				2044	2120	2				I
			HARV				2053	2054	3	2053	2054	2	IIIG,V
			CULG				2053.5	2055	3	2053.5	2054.5	3	IIIG,V
			CULG				2119		1				IIIB
			HARV				2137	2139	1				IIIG
			CULG	2205	2400								IN,W
27	0000	0719	CULG				0208.5	0209	1				I
	0740	1050	BLEN				1023.7	1023.8	1				U

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
27	0726	1427	WEIS				1208.0	1214.1	1				IIIG
	1400	2335	HARV				1400	1412	2				I
			HARV				1406	1408	2				IIIG
			HARV				1412	1642	1				IN
	2020	2400	CULG				2020	2400					IN,W
			CULG	2121	2400	1							IN
			CULG				2121	2226	1				DC,N
			HARV				2121	2331	2				I
			CULG	2142	2400								IN,W
28	0000	0720	CULG	0000	0603		0000	0720					IN,W
			CULG				0014.5		1				IIIB,U
			LEAR				0014.8	0015.1	1				CONT
			CULG				0038	0538	1				DC,N
			CULG				0420.5	0421	1				IIIB
			CULG	0504		1	0504		1				IIIB
			LEAR				0629.9	0630.7	1				CONT
			CULG	0630	0630.5	1	0630		1				IIIG
			CULG				0651.5						IIIB,W
			LEAR				0651.5	0651.8	1				CONT
			CULG				0702	0702.5	1				IIIB,U
	1020	1245	BLEN				1025.3	1127.7	2				I,NS,DC
			BLEN				1144.6	1145.4	2				III,RS
	1340	1440	BLEN										
	1400	2335	HARV				1400	1440	2				I
			HARV				1445	2100	1				IN
	2020	2400	CULG	2020	2055	1	2020	2105	1				IN
			CULG				2026	2350					IIIN,W
			HARV				2054	2056	1				IIIG
			CULG	2055	2218.5	1	2105	2323	1				IS,DC
			HARV				2100	2330	3				I
			HARV				2132	2334	2				IIIN
			CULG	2218.5	2346	1	2323	2400	1				IN
			CULG				2334	2334.5	1				IIIG,U
			LEAR				2334.0	2334.7	1				CONT
			CULG				2345		1				IIIB
29	0000	0720	CULG				0008	0720					IIIN,W
			CULG	0008	0008.5								IIIG,W
			CULG				0028	0720					IN,W
			CULG				0228	0228.5	2				IIIG
			LEAR				0228.1	0228.5	2				CONT
			CULG				0344	0351	1				IIIN
			LEAR				0346.9	0347.3	1				CONT
			LEAR				0346.9	0347.3	1				CONT
			CULG				0535	0537					IIIG,V,W
			LEAR				0658.2	0700.8	2				CONT
			CULG	0659.5	0700	1	0658	0701	3				IIIG,V
			LEAR				0932.8	0933.3	1				CONT
			LEAR				0954.2	0956.3	1				CONT
	0950	1208	BLEN				0954.8	0958.2	2				III
			BLEN				1056.6		1				
			BLEN				1119.8	1121.2	2				III,V
			BLEN				1206.9	1207.2	3				U
	1400	2340	HARV				1400	2321	1				IN
			HARV				1444	1445	2				IIIG
			HARV				1607		1				IIIBW
			HARV				1622		2				IIIG
			HARV				1802	1803	1				IIIBW
			HARV				1847	1848	3	1847	1848	3	IIIG,V
			SGMR				1847.0	1847.4	1				III
			HARV				1857	1900	2	1857	1900	2	IIIGG
			HARV				1925		2				IIIG
	2021	2400	CULG				2033	2400					IIIN,W
			CULG	2041	2400	1							IS
			CULG				2113	2400					IN,W
			CULG	2323	2323.5	2	2323	2323.5	1				IIIG
			HARV				2323	2332	3				IIIG
			HARV				2324	2328	3				I
			CULG	2331.5	2332	1	2332.5	2332	1				IIIG

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
30	0000	0721	CULG	0000	0721	1							IS
			CULG				0000	0353	1				IN
			CULG				0018	0721					IIIN,W
			LEAR				0042.8	0043.1	1				CONT
			LEAR				0115.9	0206.1	1				S
			CULG	0202.5	0206.5	3							DCIM
			CULG	0205	0206	3	0205	0206	2				IIIG
			LEAR				0335.0	1036.0	1				B
			CULG				0353	0510	1				IS,RSDC
			CULG	0430.5	0431.5	2							DCIM
			CULG				0510	0630	1				IN
			CULG				0630	0721	1				IS,DC
	1400	2335	HARV				1400	1515	2				IC
			HARV				1515	2335	1				IN
			HARV				1556		3	1556		2	IIIG
			HARV				1625		2				IIIG
			HARV				1725		2	1725		2	IIIGG
			HARV				1803	1805	2	1804	1805	2	IIIG,V,U
			HARV				1915		1	1915		1	IIIGW
	2021	2400	CULG				2021	2400					IIIN,W
			CULG	2028	2400		2021	2400					IN,W
			LEAR				2314.3	2315.7	3				CONT
			HARV				2315	2316	3				IIIG,V
			CULG	2315	2315.5	3	2315	2317	3	2315	2316.5	3	IIIG,V

The symbols used under the column heading SPECTRAL TYPE have the following definitions:

B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of burst
C = Underlying continuum (particularly with Type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

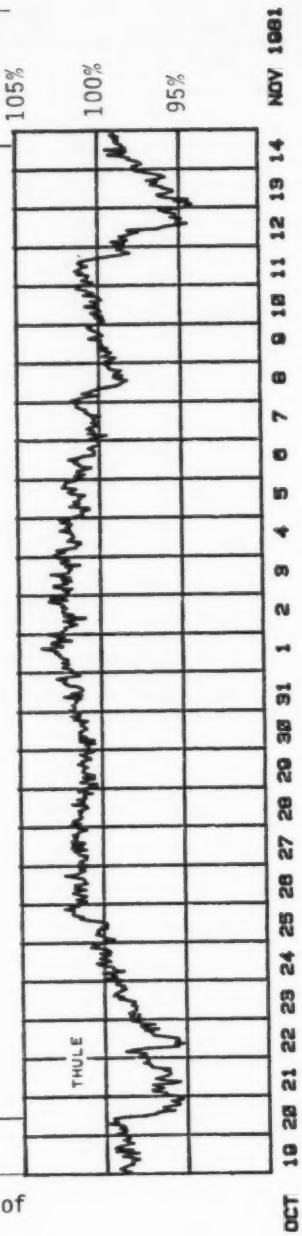
RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity
DCIM = Fast drift

COSMIC RAY INDICES

(Neutron Monitors)

NOVEMBER 1981

Nov 1981	THULE Average (cts/h)/100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300
1	4073	6631.6	6225.7
2	4060	6600.4	6223.2
3	4060	6612.8	6239.6
4	4051	6598.0	6220.8
5	4031	6562.8	6217.9
6	4007	6524.5	6183.0
7	3997	6501.5	6155.5
8	3958	6435.7	6090.1
9	3969	6460.1	6093.3
10	3986	6487.9	6147.0
11	3982	6487.5	6116.0
12	3840	6256.7	5924.4
13	3814	6193.4	5944.4
14	3913	6378.8	6033.8
15	3950	6430.4	6070.7
16	3987	6487.9	6109.0
17	3959	6441.5	6040.3
18	3982	6471.7	6115.8
19	4028	6553.6	6183.8
20	4010	6528.3	6122.9
21	3979	6465.5	6122.7
22	3992	6490.0	6133.0
23	4001	6499.8	6149.0
24	4007	6514.4	6187.9
25	3946	6411.2	6120.3
26	3960	6434.4	6098.4
27	3985	6473.6	6120.2
28	4031	6549.3	6202.3
29	4027	6572.3	6215.8
30	4035	6598.6	6229.0
MEAN	3987	6488.5	6134.5



For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

GEOMAGNETIC ACTIVITY INDICES

NOVEMBER 1981

Day	Three-Hourly Indices Kp									Ap	Cp	Three-Hourly Indices Km								Am	aa			
		1	2	3	4	5	6	7	8	Sum			1	2	3	4	5	6	7	8		N	S	M
1	Q9A	1+	2+	1	3	2+	2-	1+	2-	15-	7	0.4	1+	2-	1-	3-	2+	2+	1+	2-	14	13	18	17 14 K
2	Q5	1	1+	1-	0+	1-	2-	2+	2	10	5	0.2	1	1+	1-	0+	1-	2-	2-	2+	9	10	10	6 15 C
3	Q0A	3-	3-	2-	2+	1+	1+	3-	1+	16	8	0.4	3-	2+	1+	2+	2-	2-	3-	1	15	17	18	22 13
4	Q8K	0+	1	1	1-	2-	2	3-	3-	12	6	0.3	1-	1	1-	0+	2-	2	3-	3-	11	15	15	7 22
5		2+	3	3+	3-	3	2	2-	2-	20-	11	0.6	2-	3-	3	3-	3	2+	2-	2-	20	18	16	15 18
6		3	3-	1	2	2+	1+	2	3-	17	9	0.5	3-	2	1	2+	2+	2-	2	3-	17	17	19	16 19
7		3+	5-	4-	3+	4-	3	2	2+	26	19	1.0	3-	4-	3	3+	3+	3	2	2	29	30	23	29 25
8		3-	5-	5	5	4-	4	3	2-	30-	27	1.2	3-	4-	4+	5-	4-	4+	3	2	46	38	45	48 35
9	Q4	1+	1-	1	2-	2	1	1-	1	9+	4	0.2	2-	1	1	1+	2	1	1	1	8	9	13	12 10 C
10		0+	2	3+	4	3+	2	3-	3	21-	13	0.8	1+	2+	3	4-	3	2	3	3	26	22	27	22 27
11	D3	2+	3+	3	3+	6	5-	4+	5-	32-	31	1.3	2	3-	3	3+	6-	5-	4+	5-	59	46	54	24 77
12	D2	6	7-	5	5-	3	2+	1	1	30-	39	1.4	5	5+	5-	4	3	2+	2-	1+	50	50	43	76 16
13	Q6K	0+	0+	0+	1+	0+	1	2	3	9-	5	0.2	1	1	1-	1	1-	1	2-	3	10	9	15	7 17 K
14	D4	2+	3+	3-	4+	5-	5-	4-	5	31-	27	1.2	2+	3	3-	4	4+	4+	4-	5-	50	42	49	35 57
15		5-	4+	4-	3-	3	4-	2+	2	26+	20	1.0	4+	4	3	3-	3	3+	2	2+	36	24	26	29 22
16		4-	4	3	2+	3-	2	4-	4-	25	17	0.9	3	3	3-	2	2+	3-	4	4-	30	29	31	21 39
17	D1	4+	3+	3-	5	4+	5-	5-	4+	33+	32	1.3	4-	3-	3-	4+	4+	4+	4+	4	52	54	53	48 59
18		4-	3+	4	5-	4	4-	4+	3+	31	26	1.2	3	3-	3+	4	4	3+	4-	3+	42	36	29	28 38
19		4-	2+	3-	3-	3	3+	3	3-	23+	14	0.8	3-	2	2	3-	3	3	3-	2+	23	26	20	14 32
20		3	2	3	3+	3	2+	2+	3+	22+	13	0.8	3-	2-	2+	3	3	3-	3-	3	25	24	24	17 31
21		3	2	3-	3-	3-	3	3	4+	23+	15	0.8	2	2-	2+	3-	3-	3	3+	4-	27	30	32	16 47
22		3+	3	3+	3-	2	2	1	2	19+	11	0.6	3	2	3-	3-	2	2+	1	2	18	16	13	15 13
23		2+	2	3-	4+	3+	4+	4-	4+	27	20	1.0	2-	2-	2+	4	4-	4+	3+	4-	36	28	27	18 37
24		3+	2+	2	2-	3	2-	2-	2-	17+	9	0.5	2+	1+	1+	2-	3	2-	2-	2-	15	20	12	16 17
25	D5	5-	4+	4-	5	5-	3+	2+	3-	31-	27	1.2	5-	4-	4	5	5-	3+	2+	3-	53	42	85	89 38
26		3-	3-	2+	2-	2+	2+	3-	1+	18	9	0.5	2+	2+	2+	2	2+	3-	3-	1+	18	19	15	16 17
27	Q2	1-	1+	2-	1	0+	0+	1-	1	7	4	0.1	1	1+	2	1+	0+	0	1-	2-	7	6	10	9 7 CK
28	Q7K	3	1	1	1-	1-	1+	1+	2+	11+	6	0.3	3-	1+	1+	0+	1+	2-	1+	2	11	12	14	15 11 KK
29	Q3	3-	1	1-	1	1-	0+	1-	1-	8-	4	0.1	2+	1+	0+	0+	1	1-	1	1	7	9	8	12 5 CC
30	Q1	0	0	0	1	1-	0+	0	0+	2+	1	0.0	0+	0	0	1-	1-	0+	0	1-	2	4	5	5 5 CC
									Mean		15	0.69									25.5	23.8	25.6	24.8

Day	Three-Hourly Indices Kn								An	Three-Hourly Indices Ks								As
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	
1	1-	1+	1-	3-	2	3-	1+	1+	13	2	2	1-	3	2+	2+	2-	2	15
2	1+	1	1-	0	1-	2-	2-	2	8	1	1+	1-	0+	1-	1+	2	2+	9
3	2+	2-	1	3-	2-	2-	2+	1	14	3-	3-	2-	2	2-	2	3-	1+	17
4	0	1-	1-	0+	1+	2+	3-	2+	10	1	1+	1-	0+	2-	2	3-	3-	12
5	2-	3-	3+	3-	3	2+	2	2-	21	2	3-	2+	3-	3-	2+	2-	2	19
6	2+	2-	1-	2+	3-	2-	2	3-	16	3	2+	1+	2+	2+	2-	2+	3-	18
7	3-	4-	3+	3+	4-	3	2+	2+	32	3-	3	3-	3	3	3	2-	2-	25
8	3-	4	4+	5	4-	4	3	1+	47	3	3+	4+	5-	3+	5-	3+	2+	46
9	1+	1-	1	2-	2	1	1	1-	8	2	1+	1	1+	2	1-	1	1+	9
10	1+	2+	3	4-	3	3-	3	3-	25	2-	3-	3	3+	3-	2-	3	3+	26
11	2-	2+	3	3	6-	5-	4	4+	50	3-	3-	3	4-	6	5	5-	5	68
12	5-	6-	4+	4	3	2+	1+	1-	50	5	5	5-	4	3	2+	2-	1+	50
13	1-	0+	0+	1	1-	1	2-	3-	8	1+	1+	1+	1+	1-	1	2	3	12
14	2+	3-	3-	4-	4+	4	4-	4	42	2+	3+	3	5-	4+	5-	4	5+	58
15	3+	4-	3	3-	3-	3+	2	2	29	5	4+	3+	3-	4-	4-	2	3-	43
16	3	3	3-	2-	2	2+	4-	3+	27	3	3+	3	2	3-	3	4+	4	34
17	3+	3-	2+	5-	4+	4+	4	4	50	4	3	3-	4	4+	4+	5-	4	55
18	3+	3-	3+	4	4	3+	4-	3+	41	3	3-	3+	4-	4+	3+	4	4-	42
19	3-	2-	2+	3-	3	3+	3	2+	24	3-	2+	2	3-	3	3-	3-	3-	22
20	3-	1+	3-	3+	3+	3-	3-	3+	27	3-	2+	2	3-	3-	3	3-	3	23
21	2	1+	3-	3-	3-	3+	3+	4-	28	2-	2	2	3-	3-	3	3+	4-	25
22	3-	2-	3	3-	2	2+	1-	2	19	3	2+	3-	2+	2	2+	1+	2	18
23	2-	2-	2+	4-	3+	4+	4-	4-	35	2	1+	2+	4+	4-	4	3+	4	38
24	3-	1+	1+	1+	3	2	2	2-	15	2	1+	1+	2	3+	2-	1+	2-	14
25	4+	3	3+	5-	4+	3	2	3-	42	5-	4+	4+	5+	5	3+	3-	3-	65
26	2+	2	2+	2-	2+	2+	3-	1+	17	3-	2+	2	2	2+	3	3-	1+	19
27	1	1	2+	1+	0+	0	0+	1	7	1+	1+	2	1	0+	0	1	2+	8
28	2	1-	1-	0	1+	2-	1	2+	9	3	2-	2-	1-	2-	2-	2-	2	14
29	2+	1-	0+	0+	1-	1-	1-	1	6	2+	2-	1-	1-	1+	1-	1	1-	8
30	0	0	0	0+	1-	0	0	1-	2	1-	0	0+	1-	1-	0+	0	1-	3
								Mean	24.1									27.2

ERRATA:

Conversion in 1979 to a new computer with a different word size caused values of indices aa to be truncated if they exceeded 99; the machine read and printed only the two least significant digits. Correct values of the affected indices are listed below. Both half-daily values are given, too, to make clear which of the two entries should be corrected.

Date	N	S	M
21 Feb 1979			66 102
10 Mar			54 101
25 Apr	109		27 148
26 Apr			103 15
13 Aug			53 108
20 Aug			33 100
29 Aug			59 111
18 Sep			100 63
25 Jul 1980			13 100
19 Dec	118	123	63 178
06 Feb 1981			24 116

NOTE:

aa indices are provisional from 1 January 1981 until further notice, in connection with the change of the Southern Hemisphere observatory.

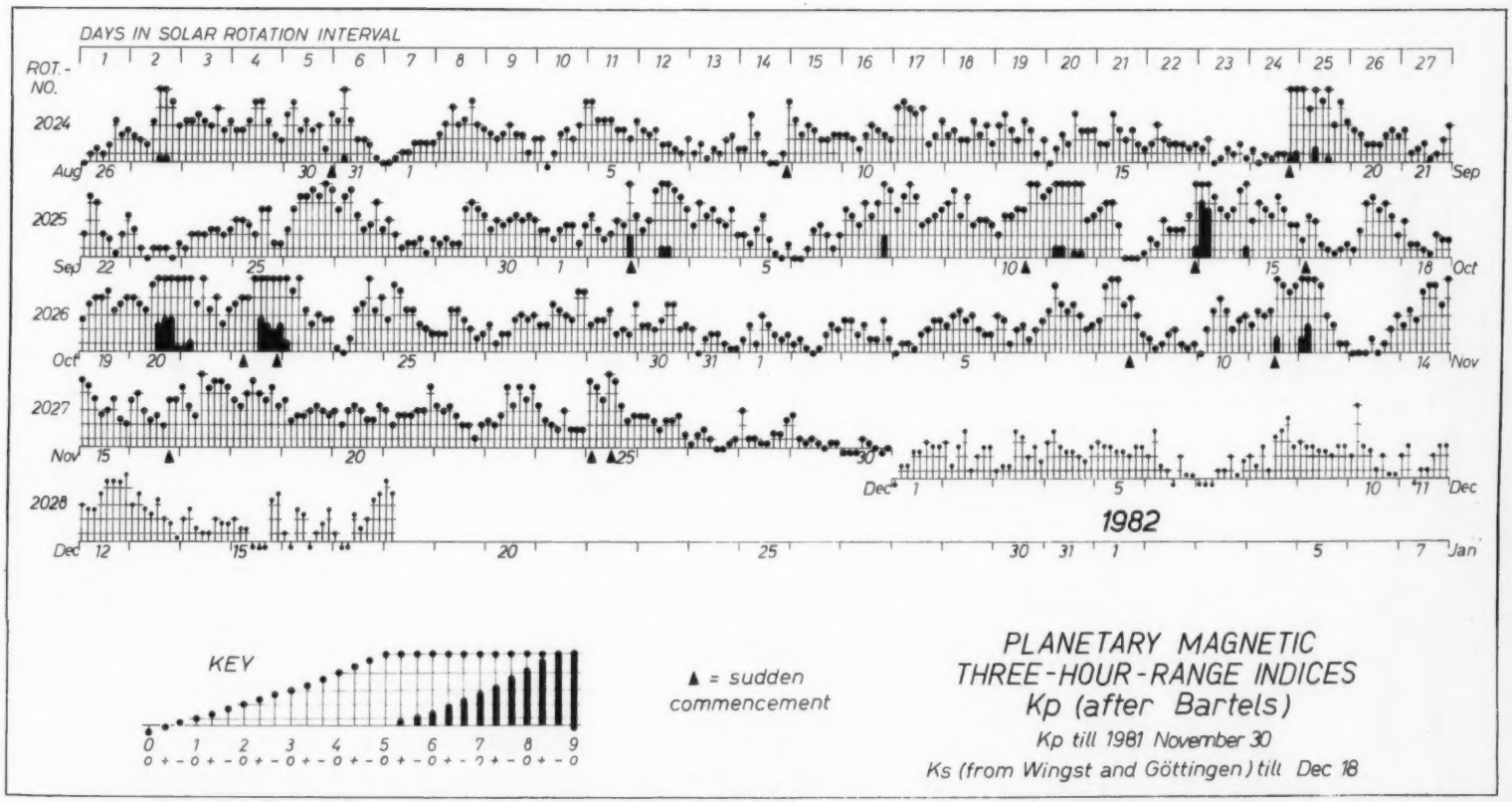
Quiet days (Q) and disturbed days (D), geomagnetic planetary three-hour-range indices (Kp) (integers alone are equivalent to those normally given with a small zero), magnetic character figures (Cp), and average amplitude (Ap) (unit 2 nT) prepared by Geophysikalisches Institut at the University of Göttingen, F.R. of Germany for the International Service of Geomagnetic Indices. Ten most quiet days [Q1-Q0(10)] and five most disturbed days [D1-D5] are ordered from most quiet or disturbed, respectively. A or K means "not really quiet" (A = "Ap>6", K = "Ap≤6 but one Kp>30 or two Kp values>3-"). An asterisk means "not really disturbed" (Ap<20).

Geomagnetic three-hourly indices Km, Kn, Ks, daily mean values Am, An, As (unit 1nT), and indices aa are prepared by M. Menvielle of the Institut de Physique du Globe, Paris, France. For aa indices daily north (N) and south (S) values, and half-daily antipodal mean (M) values are given. Quiet 24-hour and 48-hour intervals centered on 1200 UT are indicated for really quiet as C and for quiet but with some slightly disturbed three-hour intervals as K. The first hundred years series of aa is in IAGA Bulletin No.33, and complementary data are in IAGA Bulletin No.39.

DAILY AVERAGE INDICES Ap

	1980	1981										
DAY	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	19	13	14	28	23	16	7	17	18	5	9	7
2	7	9	22	25	10	7	7	22	15	18	22	5
3	21	9	13	8	14	5	16	9	18	9	36	8
4	8	14	9	12	11	4	5	9	11	11	17	6
5	4	9	25	81	4	4	6	12	15	17	7	11
6	4	9	48	11	10	5	14	19	14	8	6	9
7	6	6	20	20	9	5	50	14	10	5	32	19
8	9	11	14	10	11	11	16	8	4	10	25	27
9	10	6	22	4	8	39	4	6	7	11	21	4
10	10	9	3	8	8	32	4	4	16	9	27	13
11	16	19	10	7	39	61	6	13	15	21	46	31
12	16	4	11	11	96	13	4	20	9	10	12	39
13	6	6	7	28	121	10	5	9	9	12	17	5
14	8	6	3	45	27	18	4	7	8	10	73	27
15	10	7	10	19	8	54	11	4	13	10	20	20
16	16	12	10	14	13	59	21	8	8	7	8	17
17	5	8	6	18	19	13	10	29	25	4	18	32
18	15	4	6	19	14	57	10	10	23	18	6	26
19	79	3	6	10	45	18	10	9	10	38	23	14
20	21	4	9	9	53	43	10	12	8	9	67	13
21	26	2	5	8	41	12	7	6	14	7	33	15
22	11	9	6	4	33	6	5	24	13	13	72	11
23	5	8	12	4	31	19	5	37	56	4	27	20
24	3	8	20	4	22	18	13	13	28	7	18	9
25	8	7	24	36	19	33	15	134	16	13	18	27
26	6	8	29	28	62	8	14	78	8	32	10	9
27	10	8	21	14	43	6	10	24	25	21	10	4
28	4	16	11	12	13	12	9	8	18	6	19	6
29	9	15		18	19	6	33	5	18	14	12	4
30	13	7		16	7	6	14	9	17	15	12	1
31	15	22		26		8		12	15		4	
MEAN	13	9	14	18	23	20	12	19	15	12	23	15

GEOMAGNETIC ACTIVITY INDICES



With Best Wishes for a Happy New Year

Institut für Geophysik Göttingen

161
Nov 81

PRINCIPAL MAGNETIC STORMS

NOVEMBER 1981

OBS. 3 letter code	GEOMAG-NETIC LAT.- TUDE	COMMENCEMENT DAY	hr min (UT)	TYPE	SC - AMPLITUDES D(')	H(γ)	Z(γ)	MAXIMUM 3 HOUR - INDEX K DAY (3 HOUR PERIOD)	K	RANGES D(')	H(γ)	Z(γ)	UT END DAY	HOUR
SIT	60.0N	06	09--	..	..	..	..	07(5)	7	--	510	480	08	21
HYB	07.6N	06	0200	..	..	..	..	07(5)	4	4	173	28	07	22
NEW	55.1N	07	03--	..	..	..	..	08(2,4,6)	5	29	110	149	09	06
IRK	41.0N	08	0100	..	..	..	..	08(3,4,6)	5	10	140	30	08	22
HON	21.1N	08	1619	SC	--	11	5	08(2,4,6)	4	6	53	19	08	23
HYB	07.6N	08	0100	..	..	..	..	08(4)	5	3	86	24	09	04
GUA	04.0N	08	0111	..	..	..	..	08(4)	5	--	170	30	09	04
HUA	00.6S	08	0110	..	..	..	..	08(6)	7	10	440	67	08	23
PMG	18.6S	08	01--	..	..	..	..	08(4)	5	10	120	80	09	04
HER	33.7S	08	0110	..	--	--	--	08(4)	5	21	55	64	08	21
KGL	56.5S	08	1619	SC	4	53	23	08(4)	5	--	--	--	08	23
HYB	07.6N	10	0325	SC	- .1	14	- 1	10(4)	4	3	104	10	11	09
HUA	00.6S	10	0325	..	..	..	..	11(5)	8	11	493	54	12	21
COL	64.6N	11	05--	..	..	..	..	11(5)	8	211	2020	790	12	22
SIT	60.0N	11	1239	SC*	-11	-77	*-37	11(5)	7	--	--	620	12	22
NEW	55.1N	11	1239	SC*	16	35	13	12(2)	6	47	197	312	12	24
FRD	49.6N	11	1230	SC*	6	32	- 6	11(5) 12(2)	6	25	133	95	13	--
IRK	41.0N	11	1241	SC	4.4	65	11	11(5)	6	22	168	30	12	21
HON	21.1N	11	1239	SC	1	28	11	11(5,8) 12(1)	5	6	174	35	12	17
JAI	17.3N	11	1237	SC	- 1.8	42	-12		-	7	125	30	12	14
SHL	14.7N	11	1237	SC	.2	39	10		-	5	127	20	12	14
UJJ	13.5N	11	1237	SC	- 1.2	49	-11		-	5	145	30	12	14
ABG	09.5N	11	1237	SC	- 1.6	37	-15	11(5,6)	6	7	137	39	12	14
HYB	07.6N	11	1239	SC	- 1	43	- 1	11(5)	6	5	149	21	12	22
GUA	04.0N	11	1238	SC	--	44	-12	11(5)	6	--	160	40	12	14
ANN	01.5N	11	1237	SC	- 2.4	35	25		-	5	152	57	12	14
TRD	01.1S	11	1237	SC	.3	45	53		-	3	205	172	12	14
PMG	18.6S	11	1236	SC	.4	60	50	11(5)	6	12	200	90	12	17
HER	33.7S	11	1237	SC	8	40	37	11(5,6)	6	44	134	174	12	13
GNA	43.2S	11	1237	SC	2.9	60	19	11(5) 12(1)	6	39	100	120	12	14
KGL	56.5S	11	1238	SC	6	90	34	11(4,5,6,7,8) 12(2)	6	--	--	--	12	15
COL	64.6N	14	05--	..	..	..	..	17(4)	7	232	1440	930	19	20
IRK	41.0N	14	0530	SC	3.5	27	4	14(5,6,8)	5	13	103	31	15	20
JAI	17.3N	14	0536	SC	- 1	24	-10		-	5	156	52	15	09
SHL	14.7N	14	0536	SC	--	19	3		-	3	161	38	15	09
UJJ	13.5N	14	0536	SC	- .9	27	- 7		-	4	184	42	15	09
ABG	09.5N	14	0536	SC	- .7	22	-10	14(5)	6	6	182	30	15	09
HYB	07.6N	14	0536	SC	- .4	25	- 4	14(5)	6	5	211	21	16	10
GUA	04.0N	14	0924	..	..	..	..	15(1)	5	--	130	40	15	06
ANN	01.5N	14	0536	SC	- 1.4	43	13		-	5	208	57	15	09
HUA	00.6S	14	0533	..	..	..	..	14(5,6)	6	11	306	45	15	04
TRD	01.1S	14	0536	SC	--	70	70		-	3	272	187	15	09
PMG	18.6S	14	04--	..	..	..	..	14(4,5)	5	7	110	60	15	09
HER	33.7S	14	0923	SC	- 2	-23	-13	14(4,8) 15(1)	5	27	95	130	15	03
GNA	43.2S	14	0534	SC*	1.3*	29	* 7	* 14(5,7,8)	5	18	120	140	16	10
KGL	56.5S	14	0534	SC	- 6	-30	-10	14(8) 15(1)	7	--	--	--	15	09
SIT	60.0N	16	2030	SC*	10 *	-34	*-10	* 17(5)	6	--	390	500	20	19
NEW	55.1N	16	2028	SC*	6	22	3	17(5,6)	5	23	131	149	19	05
FRD	49.6N	16	2029	SC*	1	25	- 4	17(4,5)	5	10	132	49	--	--
IRK	41.0N	16	2031	SC	3.6	4	7	17(4,5,6,7)	5	15	121	34	19	03
HON	21.1N	16	2030	SC	1	22	8	16(7)	4	9	93	37	18	14
JAI	17.3N	16	2029	SC	- 1	20	- 7		-	4	133	24	19	02
SHL	14.7N	16	2029	SC	.4	23	5		-	5	122	29	19	02
UJJ	13.5N	16	2029	SC	- .7	33	- 8		-	4	147	23	19	02
ABG	09.5N	16	2029	SC	- .9	25	- 7	17(4)	6	4	158	24	19	02
HYB	07.6N	16	2031	SC	- .5	25	- 1	17(4,5,6,7) 18(5)	5	4	171	27	19	03
GUA	04.0N	16	2029	..	..	..	..	17(1)	5	--	70	20	17	07
ANN	01.5N	16	2029	SC	- 1.2	24	15		-	4	221	61	19	02
HUA	00.6S	16	2028	SC*	3	95	- 8	17(5,6)	6	14	286	72	17	24
TRD	01.1S	16	2029	SC	- .1	25	30		-	4	239	137	19	02
PMG	18.6S	16	2029	SC*	- 1.3*	22	13	17(4)	5	10	140	60	18	19
GNA	43.2S	16	2029	SC*	4.1*	27	* 22	* 16(8) 17(1,5,8) 18(5,8)	5	23	110	110	19	03
KGL	56.5S	16	2029	SC	5	43	17	17(7)	7	--	--	--	19	03
GUA	04.0N	17	0901	..	..	..	..	17(4)	5	--	80	40	18	18
HYB	07.6N	20	1625	SC	- .1	9	- 1	21(6)	4	4	109	21	22	17
HYB	07.6N	22	2200	..	..	..	..	23(6)	5	3	146	20	24	01
COL	64.6N	23	0607	SC*	-20	-110	-24	23(6)	7	306	1560	660	23	20
IRK	41.0N	23	0600	..	..	..	..	23(4,6)	5	16	74	20	23	24
FRD	49.6N	25	0229	SC	..	63	- 9	25(1)	5	14	90	36	27	--
HON	21.1N	25	0230	SC	1	42	16	25(1,4,5)	5	4	56	26	25	19
JAI	17.3N	25	0229	SC	- 1.7	43	-12		-	4	105	26	25	18
SHL	14.7N	25	0229	SC	.4	45	10		-	3	96	36	25	18
UJJ	13.5N	25	0229	SC	- 1.4	57	-16		-	4	115	26	25	18
ABG	09.5N	25	0229	SC	- 2	48	-21	25(1)	6	4	116	34	25	18
HYB	07.6N	25	0230	SC	- 1.4	58	- 4	25(1)	6	3	149	15	25	23
GUA	04.0N	25	0229	SC*	1	83	-24	25(1)	6	--	130	40	25	17
ANN	01.5N	25	0229	SC	- 4	95	39		-	9	197	70	25	18
HUA	00.6S	25	0229	SC	2	85	14	25(4,5,6)	6	9	247	39	25	21
TRD	01.1S	25	0229	SC	- 1.3	84	90		-	5	237	182	25	18
PMG	18.6S	25	0229	SC*	.4*	70	60	25(4,5)	6	7	150	120	25	19
HER	33.7S	25	0229	SC*	8	46	43	25(4)	6	28	95	75	25	17
GNA	43.2S	25	0228	SC*	-10.2*	18	-32	* 25(1,3,4,5)	5	26	110	140	25	19
KGL	56.5S	25	0229	SC	5	37	10	25(4)	6	--	--	--	26	22

REPORTS WERE RECEIVED FROM THE FOLLOWING OBSERVATORIES:

ALIBAG ANNAMALAINAGAR COLLEGE FREDERICKSBURG GNANGARA GUAM HERMANUS HONOLULU HUANCAYO
HYDERABAD IRKUTSK JAIPUR KERGUELEN NEWPORT PORT MORESBY SHILLONG SITKA TRIVANDRUM
UJJAIN

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

NOVEMBER 1981

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS

The meaning of the station symbols is given in the IAGA-Bulletin nr. 32h, page 106-116.
Times of ssc are mean values.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc)

08 1618 A: WNG DOU AQU TOL CZT; B: NGK HAD CLF EBR KGL DUM (si: A: WIT HUA MPO)

11 1238 A: SOD DOB NUR WNG WIT DOU VIC CLF OTT COI TOL FRD HTY MPO KGL; B: NGK HAD MMB AQU EBR KAK KNY BNG DUM (si: A: HUA)

14 0535 A: COI KGL; B: VIC BNG MPO CZT; C: WIT EBR TOL (sfe: CLF KAK KNY)

16 2029 A: DOB NUR WNG DOU OTT COI TOL FRD BNG HUA MPO CZT KGL DUM; B: ESK WIT HAD CLF AQU EBR KAK HTY; C: NGK MMB KNY

25 0929 A: SOD DOB NUR WNG HAD DOU VIC CLF EBR TOL FRD BNG HUA MPO KGL; B: ESK WIT NGK AQU HTY CZT DUM (si: B: OTT)

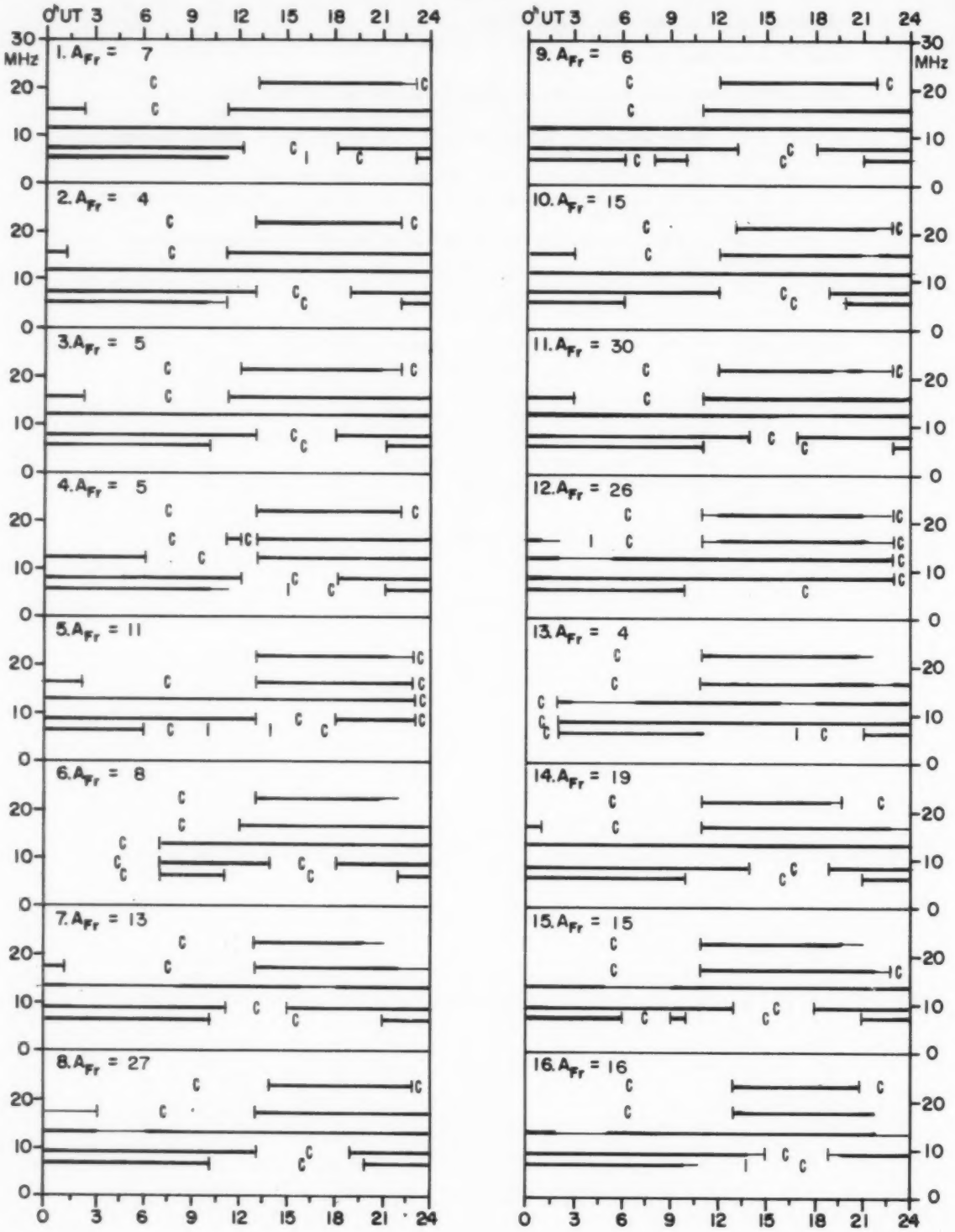
Solar-flare effects (sfe)

Effects confirmed by ionospheric or solar observations are underlined.

01	0441 - 0453	KAK KNY	08	0823 -	BNG (ssc: C: TOL)
02	0145 - 0200	KNY	10	0545 - 1612	KAK KNY
02	1212 - 1221	MPO	12	1601 - 1610	HUA
03	0908 -	BNG	12	1650 -	CLF BNG (ssc: B: WNG; C: HAD KGL -
04	1434 - 1449	WIT CLF TOL			si: A: MPO; B: TOL HUA; C: EBR)
05	0834 - 0918	KAK	13	1102 - 1112	BNG MPO
07	0354 - 0410	KAK HTY KNY	13	1127 - 1147	WNG
08	0315 - 0330	KNY	13	1650 - 1700	HUA
			13	1921 - 1929	HUA

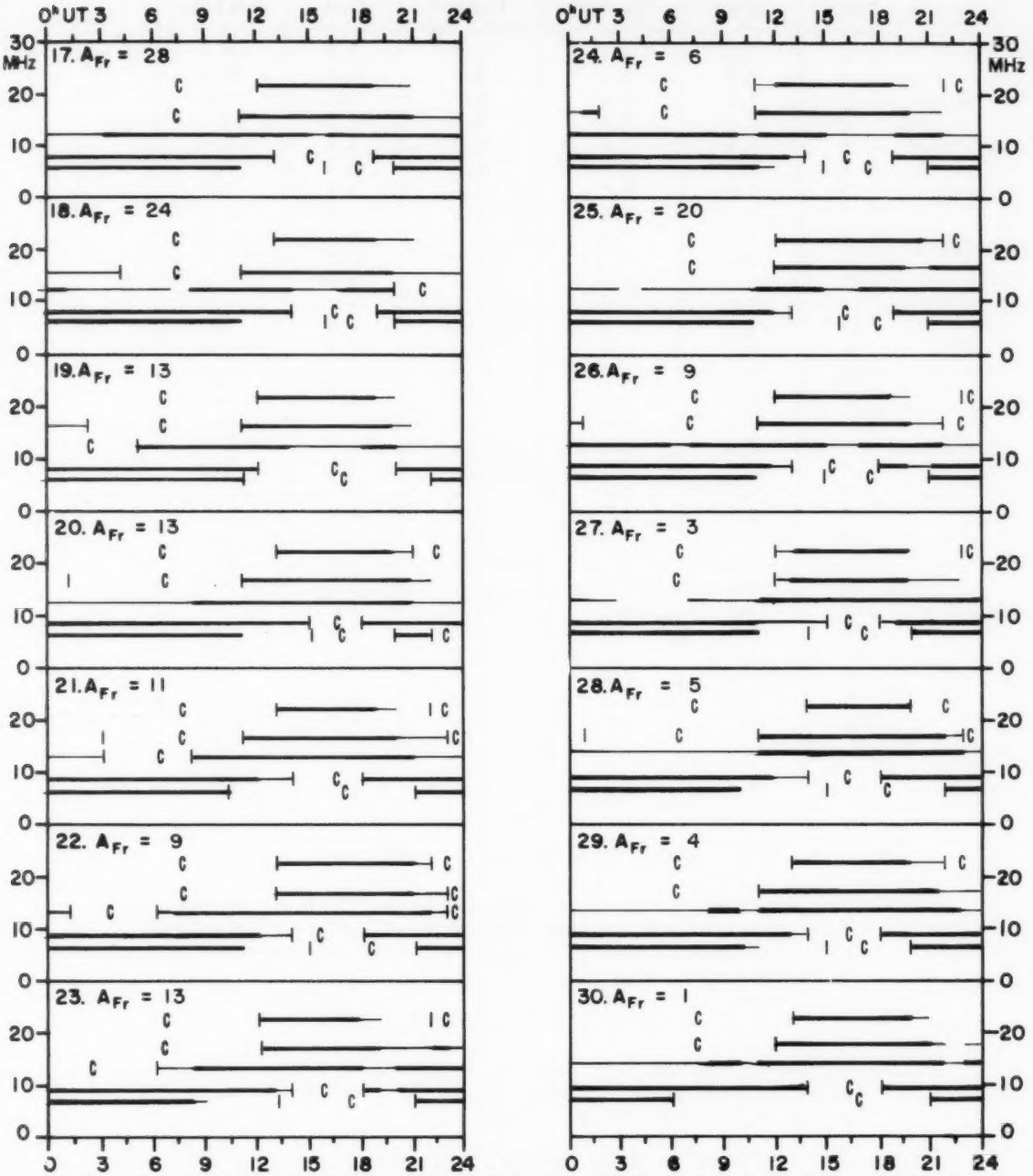
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

NOVEMBER 1981



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

NOVEMBER 1981



Field strengths from five frequencies, 6.4, 8.6, 13.0, 17.0 and 22.5 MHz, observed on a Norddeich -New York circuit are represented above. Heavy solid lines represent field strengths ≥ -12 dB above 1 μv/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB above 1 μv/m and -40 dB above 1 μv/m are represented by the fine line.

RADIO PROPAGATION QUALITY INDICES

NOVEMBER 1981

DAY	TOKYO	NEW YORK	TEHERAN	OSLO	BRACKNELL
1	7.6	8.1	6.7	7.9	8.1
2	7.9	8.7	6.0	8.8	6.9
3	7.8	8.1	5.7	9.1	7.4
4	8.1	7.7	5.7	7.9	7.0
5	7.4	7.6	6.3	7.4	5.9
6	7.6	6.4	6.6	6.6	7.5
7	7.5	6.4	6.6	4.5	7.0
8	6.7	7.6	7.3	6.5	6.9
9	7.0	7.5	5.8	6.4	6.0
10	5.6	7.1	6.5	6.7	7.0
11	5.2	6.0	6.8	4.6	6.5
12	5.6	6.0	6.1	2.7	5.1
13	7.5	6.0	5.4	6.4	7.2
14	6.5	5.7	8.1	6.7	6.1
15	5.8	5.7	6.3	4.4	5.2
16	5.4	5.0	5.6	3.4	5.5
17	5.4	3.6	6.9	4.0	5.8
18	4.0	3.6	6.1	3.4	4.1
19	5.7	3.3	4.1	3.0	4.1
20	5.3	3.6	0.0	2.7	5.0
21	4.6	3.3	0.0	4.4	6.3
22	2.6	3.3	0.0	2.7	2.9
23	4.7	3.7	0.0	3.8	6.0
24	4.3	2.1	0.0	2.2	3.3
25	4.3	4.2	5.6	3.9	4.7
26	4.3	3.9	0.0	2.3	2.1
27	2.7	3.6	0.9	2.7	1.9
28	3.8	5.0	1.9	2.9	3.3
29	2.5	5.1	5.2	3.0	3.1
30	4.9	5.6	4.9	3.3	2.6
MEAN	5.6	5.4	4.6	4.8	5.3

CALCULATION OF QUALITY INDICES (Q)

From all 24 hourly field strength values and from all frequencies of the same circuit a median field strength value is calculated (FD). This daily value is compared with the average value (FA) of the preceeding 27 days (1 sun rotation).

$$Q = 6.0 + 20 \log(FD/FA)/3.0$$

The quality indices vary from 0.0 to 9.9 where 6.0 is normal. Conditions are "normal" (index = 6.0), if they correspond to the average of the preceeding 27 days.

Scale for Quality Indices

0.0 - 1.0 = very poor
1.1 - 3.0 = poor
3.1 - 5.0 = fair
5.1 - 7.0 - normal
7.1 - 9.0 = good
9.1 - 9.9 = very good

LATE DATA

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SUDDEN IONOSPHERIC DISTURBANCES

OCTOBER 1981

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	HALE REGION
01	0323	0400	0330	1-	1					1			0320	No data
01	0515	0554	0521	1-	3				2	1			*	
01	0806	0831	0809	1-	3			1		1	1		0804	No data
01	1505	1600	1620	1-	1				1		1		*	
01	1618	16300	1630	1-	3	1			1		1		1610	No data
01	1947	1953	2030	2+	5	3			1		12		1949	No data
02	0336	0438	0351	1-	3				2	1	1		0335	No data
02	0726	0812	0734	1-	3				2	1	1		0726	No data
02	1114	1225	1132	1-	3	1		1	1	2			*	
02	1132	1320	1220	1	1			1					1125	No data
02	1300	1508	1312	1	5	1		2	1	1	3		1316E	No data
02	1613	1629	1616	1-	5	1			1		15		1612E	No data
02	1630	1815	1642	2	5	2			1		15		1630	No data
02	1853	1930	1900	1-	5	1			1		15		1852	No data
02	1930	2000	1935	1-	3						9		1935E	No data
02	2057	2200	2104	1-	5	1			2		16		2106	No data
02	2350	0030	0003	1-	1				1				2353	No data
03	0044	0116	0047	1-	3				1	1			0045	No data
03	0218	0312	0235	1-	3				1	1			0218	No data
03	0510	0553	0518	1-	3				2	1	2		0510	No data
03	1029	1115	1038	1-	5	2			1	1	1		1026E	No data
03	1255	1458	1315	1-	1				1				1249	No data
03	2205	2220	2207	1-	1						1		2207	No data
04	0059	0139	0108	1-	1				1				0059	No data
04	0358	0423	0406	1-	1				1				0358	No data
04	0948	1032	1005	1	3			2					*	
04	2000	2032	2005	1-	5				1		7		NF	
04	2040	2137	2055	1-	5				1		6		NF	
05	0151	0234	0158	1-	1				1				0151	17875
05	0549	0754	0623	1	5			1	2	1	2		*	
05	1220	1256	1230	1	3			2					NF	
06	0554	0626	0604	1	3				2	1			*	
06	0723	0811	0729	1-	5			1	1	4			0725E	17891
06	0902	0930	0905	1-	1						1		0900	17892
06	1333	1417	1344	1-	3				1		1		1330	17876
06	1620	16310	1631	1-	1				1		1		1623	17876
06	2321	2345	2328	1-	1				1				NF	
07	0157	0239	0213	1-	3	1			2				NF	
07	0311	0346	0319	1-	3				2				0310	17890
07	0451	0602	0532	1-	3				2				0448	17876
07	0525	0550	0532	1-	3				1		1		*	
07	0630	0700	0635	1-	1						1		0626	17884
07	0830	0915	0845	1-	1						1		0827	17890
07	1233	1300	1241	1-	3	1		2		1	1		*	
07	1328	1420	1340	1+	5	4		4		1	2		1332E	17890
07	1635	1715	1639	1	3						11		1633	17876
07	1803	1824	1806	2	5	2					15		1802	17890
07	2222	2245	2238	1-	3				1		3		2222	17890
07	2243	0226	2305	3+	5	3			1		6		2236E	17890
07	2255	0002	2309	2	3	1					4		2259	17901
08	0141	0230U	0146	1-	1	1							0143	17890
08	0230E	0411	0237	1	1				1				0230	17890
08	0641	0715	0651	1-	1						1		0638	17901
08	1040	1100	1043	1-	3			2					*	
08	1142	1205	1145	1-	3	1		2		1			*	
08	1445	1545	1459	1-	1				1				1440E	17876
08	1605	1758	1613	1-	5	1			1		11		1603	17890
09	0008	0106	0021	1-	3				1	1	3		NF	
09	0705	0726	0711	1-	3				1	1	2		0706E	17906
09	0913	0945	0917	1-	3			2		1	1		0905	17906
09	1302	1350	1315	1-	3	1		2	1	1	1		1300	17906
09	1533	1630	1548	1-	1			1	1				1531	17906
09	1829	1900	1834	1-	5				1		14		1836	17901
09	1913	1940	1920	1-	3						10		1913	17901
09	2117	2205	2121	1-	5				1		10		2117	17906

SUDDEN IONOSPHERIC DISTURBANCES

OCTOBER 1981

DAY	UNIVERSAL TIME				WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE							KNOWN FLARE	HALE REGION
	START	END	MAX	IMP		SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD		
10	0120	0202	0127	1-	3				2				0122	17906
10	0521	0717	0556	3+	5			1	2	1	5		0528	17906
10	0552	0630	0555	1-	1					1			0550	17906
10	0718	0745	0730	1	1						1		0715E	17906
10	0749	0905	0814	1-	1				1				0750	17906
10	0935	0950	0942	1+	5	1		2	1	1	1		0929	17906
10	1249	1356	1254	3	5	3		5	1	1	6		1244	17906
10	1405	1420	1409	1-	5	1		2	1	1	4		NF	
10	1423	1442	1431	1	5	3		4	1	1	8		NF	
10	1520	1555	1534	1-	3				1		6		NF	
10	1700	1610D	1703	1-	3				1		5		1700	17906
10	1739	1815	1744	1-	3				1		2		1738	17906
10	1913	1938	1920	1	1						1		1915	17906
10	2042	2058	2048	1-	3				1		4		NF	
10	2059E	2222	2107	1	5	2			1		14		2058	17890
10	2304	0115	0002	1-	3				2		1		2303	17906
11	0333	0433D	0339	2+	5	2			2	1	2		*	
11	0433E	0536	0442	1-	3				1	1	2		0433	17892
11	0548	0623	0555	1-	3			1	1	1	2		0550	No data
11	0747	0821D	0752	1	5	1		4	1	1	2		0749E	No data
11	0821E	0916	0839	1+	5	1		3	1		1		NF	
11	1021	1145	1047	1-	5	1		1	2		1		*	
11	1219	1300	1233	1-	3			1		1	1		1222	No data
11	1431	1445	1433	1-	5			3	1	1	5		1436	No data
11	1512	1540	1520	1-	3			1	1		5		1506	No data
11	1555	1720	1608	1	3				1		12		1552	No data
11	1917	1930	1919	1-	3						5		*	
12	0002	0034	0007	1-	3				1		1		NF	
12	0104	0142	0108	1-	3				1	1	1		NF	
12	0152	0220	0200	1-	3				1	1			NF	
12	0225	0403	0236	2+	3	1			1	1			NF	
12	0403	0426D	0410	1	1				1				0406	No data
12	0432	0551	0439	2	3	1			1	1			0426	No data
12	0614E	0946	0636	3+	5	3		3	1	1			0615E	No data
12	0625	0749	0637	1-	1				1				0626	No data
12	1038	1211	1101	2	5	2		4	1	1	2		1033E	No data
12	1106	1135	1114	1	3	1				1	1		NF	
12	1414	1430	1421	1-	3	1		2	1	1			NF	
12	1441	1545	1448	3+	5	5		5	1	1	15		1442	No data
12	1635	1641D	1641	1-	1				1				1629	No data
12	1709	1730D	1712	1-	5				1		16		1708	No data
12	1730	1750	1732	1-	5				1		10		NF	
12	1805	1910	1818	1-	5	1			1		15		1806	No data
12	1829	1846	1830	1-	1						1		1827	No data
12	2045	2155	2113	1	3	2			2		7		2044	No data
12	2211	2314	2219	1	5	1			1		7		2212	No data
12	2331	0000	2336	1-	1				1				NF	
13	0012	0212	0051	1-	3				2		1		0010	17915
13	0043	0133D	0055	1-	3	1			1	1	2		*	
13	0109	0152	0116	1-	3	1				1	3		*	
13	0250	0416D	0308	2+	3	1			2	1	3		NF	
13	0415E	0546	0427	2+	3	1			1	1	3		NF	
13	0710	0820	0720	3	5	3		6	2	1	4		0715	17915
13	0730	0740	0734	3	3	1				1			0738E	17906
13	1401	1415	1403	1-	3	1			1	1			NF	
13	1611	1715	1615	1+	3				1	1	1		1609	17906
13	1810	2015	1826	2	5	2			1		12		1810	17906
13	2125	2157	2132	1-	5				1		8		2125	17906
13	2241	0030	2302	1+	5	2			1		6		NF	
14	0134	0230	0148	1-	3				2		1		*	
14	0239	0340	0301	1-	1				1				*	
14	0420	0535	0428	2+	5	1			1	2	3		0422	17906
14	0631	0704	0636	1-	3				1	1			0628	17906
14	0758E	0856	0811	2	5	2		3	1	1			*	
14	0923	0950	0930	2	3	1		1	1				0923	17906
14	1056	1105	1103	1+	3	2				1	1		NF	
14	1305	1325	1312	1-	3			1	1	1			1305	17906
14	1443	1500	1447	2	5	2		5	1	1	9		1439	17923
14	1645	1704	1649	1-	5				1		18		1645E	17923

SUDDEN IONOSPHERIC DISTURBANCES

OCTOBER 1981

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	HALE REGION
14	1705	1800	1713	2+	5	4			1		19		1705	17926
14	1808	1940	1813	1-	1				1				1807	17906
14	1921	1945	1922	1-	3						8		1920	17906
14	2054	2140	2100	1-	3				2		9		2054	17906
14	2227	2247	2234	1-	1				1				2226	17906
14	2330	2352	2332	1-	3				1		1		*	
15	0207	0223	0210	1-	1				1				0209	17930
15	0241	0314	0256	1-	3	1			1	1			*	
15	0319	0440	0335	2+	3	2			1	1			0329E	17926
15	0440	0549	0448	2	3	1		1	1		2		0443	17906
15	0553	0615	0556	3	5	2		1	1	1	3		0600E	17906
15	0734	0844	0751	1-	3			2	1				0736	17906
15	0902	0920	0904	1-	3			1	1	1	1		0900E	17906
15	1123	1130	1127	1	3	1		4	1	1			*	
15	1203	1225	1206	1-	3	1		4	1	1			NF	
15	1635	1710	1640	1-	3				1		3		*	
15	2016	2037	2022	1-	3						6		2018	17906
15	2038	2136	2051	1-	5	2		1			9		2038	17906
15	2232	2303D	2252	1-	3				1		1		NF	
15	2303E	0014	2308	1	3				1		4		2303	17916
16	0020	0130U	0033	1	3				1	1			NF	
16	0219	0255	0239	1-	3				1	1			*	
16	0307	0417D	0320	1	3	1			1	1			0305E	17923
16	0526	0554	0532	1-	5	1		1	1	2			*	
16	0554	0625	0602	1-	3	1			2	1			*	
16	0639	0653	0647	2+	5	2		5	1	2			0641E	17923
16	0746E	0829D	0811	1	3			2	1				*	
16	1152	1202D	1202	1-	3			1	1	1	2		NF	
16	1226	1310	1238	2	5	3		4	1	1	3		1223	17923
16	1248	1255	1253	1-	3	1		1	1	1	1		1244	17906
16	1400	1415	1404	1-	3			1	1	1	1		*	
16	1733	1815	1738	1-	3				1		6		NF	
16	1848	1905	1853	1-	3						5		1848	17906
16	2038	2140	2040	1-	5	1			2		14		2037	17923
16	2227	2340	2240	1	5	2			1		8		2225	17926
16	2355	0018	0000	1-	3				2				NF	
17	0058	0146	0107	1-	3	1			2				NF	
17	0212	0246	0214	1-	3	1			1				0211	17915
17	0254	0327	0304	1-	1				1				0255	17915
17	0333	0358	0338	1-	3				1	1			0336	17923
17	0515	0556	0528	1-	3				2	1			0522	17923
17	0733E	0834	0743	1	3	1			2	1			0736	17923
17	0853	0857D	0857	1	3			1		1			0853	17905
17	1032	1110	1046	1	5	2		4	2	1	2		*	
17	1204	1220	1207	1-	5	1		4	1	1			*	
17	1325	1345	1328	1-	3				1	1	1		*	
17	1448	1525	1459	1-	3				1		1		1443	17926
17	1615	1730	1619	1-	5				1		15		1612	17923
17	1750	1800	1830	2	5				1		18		1743	17906
17	1832	1930	1839	1-	5	2			1		16		1831	17923
17	2331	2354	2338	1-	3				1		1		2331	17923
17	2354	0020	0000	1-	3				2	1	1		2355	17926
18	0020E	0106	0027	1-	3				1	1	1		0021	17923
18	0202	0250	0210	1-	3	1			2	1			0205E	17915
18	1059	1323	1123	1	5	2		3	1	1	2		1106E	17906
18	1604	1705	1611	1-	3				1		9		1602	17926
18	1728	1808	1733	1-	3				1		10		1728	17923
19	0055	0147	0107	1-	3				1	1			0056	17916
19	0232	0308D	0238	1	3	1			1				0232	17906
19	0308E	0524	0324	3	3	2			1	1			0307	17926
19	1558	1647	1608	1-	3				1		5		NF	
19	1918	1935	1922	1-	3						5		1918	17923
19	2230	2335D	2335	1	1						1		2230	17906
19	2324	2354	2330	1-	1				1				2323	17923
20	0148	0230	0202	1-	3				2	1			0148	17923
20	0314	0512	0336	2+	5	1		1	2	1	5		0314	17930
20	0715	0821	0735	1-	3				1	1	1		0714	17926

SUDDEN IONOSPHERIC DISTURBANCES

OCTOBER 1981

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	HALE REGION
20	1205	1220	1208	1-	3	1				1			1204	17923
20	1242	1255	1247	1-	3			1	1	1			1241	17923
20	1350	1405	1354	1+	5	1		5	1	1	1		1347	17906
20	1416	1511	1431	1	5	1		3	1				*	
20	1451	1500	1453	1-	5	1	2	1	1	1	3		1447	17923
20	1515	1630	1524	1-	3				1		1		1510	17926
20	1920	2015	1925	1-	3				1		8		NF	
20	2311	0007	2330	1-	3				1		5		2306	17923
21	0010	0136	0031	1	3				2	1	1		0011	17923
21	0150	0238	0156	1-	3				2	1	3		*	
21	0429	0514	0445	1-	1				1				0418	17923
21	0436	0516	0441	1-	3				1	1			0435E	17923
21	0542	0614D	0554	1-	3				1	1	1		0539	17923
21	0613	0737	0626	1	3				2	1	2		0614	17923
21	0706	0715	0712	1	3	1		3		1			0700	17923
21	0740E	0835	0748	1	3			1	1	1	2		0738	17923
21	0838	0857	0847	1	3			2					0840E	17923
21	1111	1210	1125	1-	3		3		1				*	
21	1251	1255	1254	1-	5	2		4	1	1			1253	17923
21	1335	1450	1345	1-	5	3		3	1	1	5		*	
21	1723	1835	1729	1-	5	2			1		15		1715	17923
21	1850	1920	1858	1-	3				1		1		1849	17926
21	2305	0010	2315	1	5	3		1	2	1	6		2306	17923
22	0637	0840	0645	2+	5	3		6	1	1	4		0643E	17923
22	1223	1320	1232	1	5	1		4	1	1	1		NF	
22	1928	1945	1932	1-	3	1					1		1928	17923
22	2248	2340	2305	1-	3				1		1		2250E	17949
23	0104	0114U	0107	1-	3				1	1			0105	17948
23	0237	0332	0246	1-	3				2	1	2		0239	17923
23	1235	1310	1244	1+	3			1	1	1			1235	17923
23	1451	1530	1500	1-	3						5		*	
23	1659	1745	1713	2	3						2		NF	
23	2050	2114	2055	1	3						5		*	
24	0611	0638	0617	1-	3				1	1			*	
24	2317	2338	2326	1-	3			1	1				NF	
24	2339	0202	2357	2	5	2			2		4		NF	
25	1449	1505	1452	1	5	1		3	1	1	5		NF	
25	2123	2138	2200	1	3	1					4		*	
26	1530	1730	1545	2	3						6		NF	
27	0349	0422	0356	1-	3					1	1		*	
27	0445	0541	0502	1-	3					1	1		0451E	No data
27	1628	1735	1638	1-	3					1	1		1621	No data
27	1830	1953	1845	1-	3	2			1		8		1832	No data
28	0356	0601	0421	2	5	1		1	2	1	4		0353	No data
28	0645	0756	0658	1-	3				1	1			0647E	No data
28	0950	1010	1002	1-	3	1		3		1			*	
28	1455	1540	1503	1	3						3		*	
28	1900	2001	1915	2	3						3		NF	
28	2046	2100	2240	2	3	1					5		NF	
28	2051	2116	2056	1-	3				1		3		NF	
29	0841	0930	0851	1	5	2		3	1	1	1		NF	
29	2007	2040	2030	1	3						6		2005	No data
30	1337	1444D	1416	1	3				1		3		*	
31	0539	0712	0610	1	3			1	1	1	2		0542E	No data
31	2346	0005	2351	1-	1				1				*	

SUDDEN IONOSPHERIC DISTURBANCES

OCTOBER 1981

DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
REGION																															
17875					1																										
17876						2	2	1																							
17884							1																								
17890							6	3		1																					
17891						1																									
17892						1					1																				
17901							1	1	2																						
17905																	1														
17906									5	11			4	8	6	2	1	1	2	1											
17915													2				2	1													
17916															1				1												
17923														2		4	6	2	2	5	11	2	2.								
17926														1	1	1	2	1	1	2	1										
17930															1					1											
17948																							1								
17949																						1									
NO FLARE				2	1	1	1		1	4	1	8	4	1	2	4	1		1	1		1	1	2	1	1		3			
NO FLARE PATROL	2	1		1	1	1	2	2			3		2	4	3	5	3			1	3		2	1	1		1	2	1	1	1
NO DATA	4	10	6	2							6	12															3	2	1		1
EVENT TOTALS	6	11	6	5	3	6	13	7	8	16	10	20	12	16	14	16	16	5	7	11	15	4	6	3	2	1	4	7	2	1	2

OBSERVATORIES REPORTING FOR OCTOBER 1981:

Ayrshire, Scotland (AY)	SES	Lintong, China (LT)	LF-SPA
Darmstadt, GFR (DA)	SWF	Louisville, Kentucky, USA (A26)	SES
Durham, North Carolina, USA (A54)	SES	Mayfield Village, Ohia, USA (A28)	SES
Edenvale, Transvall, South Africa (A52)	SES	Maui, Hawaii, USA (MI)	SWF
Ellensburg, Washington, USA (EB)	SES	Missoula, Montana, USA (A31)	SES
Eureka, Montana, USA (A56)	SES	Panska Ves, Czechoslovakia (PU)	SEA, SWF
Frenchtown, Montana, USA (A56)	SES	Paterson, New Jersey, USA (A46)	SES
Glenorchy, Tasmania, Australia (GN)	SWF	Portage, Michigan, USA (A51)	SES
Hiraiso, Japan (HI)	SWF	Saint Cloud, Minnesota, USA (SC)	SES
Hobart, Tasmania, Australia (TA)	SEA	Sofia, Bulgaria (SF)	SEA
Hobart, Tasmania, Australia (A43)	SES	Somerton, England (SO)	SEA
Houston, Texas, USA (A50)	SES	Sao Paulo, Brasil (UM)	SES, SPA
Huancayo, Peru (HU)	SWF	Thornwood, New York, USA (A48)	SES
Inubo, Japan (IN)	SPA	Trenton, New Jersey, USA (NJ)	SES
Juliusruh, GDR (JU)	SWF	Tucson, Arizona, USA (A9)	SES
Kasugai, Japan (KA)	SPA	Upice, Czechoslovakia (UI)	SEA
Kuhlungsborn, GDR (KU)	SEA, LF-SPA	Valley Cottage, New York, USA (A1)	SES
La Crescenta, California, USA (A40)	SES	Vsetin, Czechoslovakia (VS)	SEA
Lake Hiawatha, New Jersey, USA A32)	SES	Yakima, Washington, USA (A37)	SES
Latrobe, Pennsylvania, USA (A19)	SES	Zilina, Czechoslovakia (ZL)	SEA

NF No flare
* No flare patrol
Observations are not necessarily continuous for each reporting station.

DAILY CALCIUM PLAGE INDEX

OCTOBER 1981

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
81	10	1	*	81	10	11	*	81	10	21	60.9
81	10	2	*	81	10	12	*	81	10	22	55.8
81	10	3	*	81	10	13	52.4	81	10	23	49.6
81	10	4	*	81	10	14	59.2	81	10	24	38.7
81	10	5	42.8	81	10	15	71.4	81	10	25	*
81	10	6	36.4	81	10	16	75.8	81	10	26	34.0
81	10	7	37.2	81	10	17	73.2	81	10	27	*
81	10	8	41.4	81	10	18	75.4	81	10	28	*
81	10	9	43.8	81	10	19	76.7	81	10	29	39.2
81	10	10	46.1	81	10	20	66.5	81	10	30	48.3
								81	10	31	58.7

* NO OBSERVATIONS

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

OCTOBER 1981

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
01	0000	0722	CULG				0000	0235	1				IS,C
			CULG				0000	0722					IIN,W
			CULG				0018	0438	1				IIIN
			CULG				0040	0125	2	0040	0125	1	IIIN
			CULG				0235	0722					IS,W,DC
	2022	2400	CULG	2308	2308.5	1							DCIM
02	0000	0722	CULG				0014	0018					IIIN,W
			CULG				0032.5		1				IIIB
			CULG				0635.5	0640	1				UNCLF
	2021	2222	CULG				2021	2030	1				POSS II
	2226	2400	CULG										
03	0000	0721	CULG				0051	0628					IIIN,W
			CULG				0143.5	0145	1				IIIGG
			CULG	0541.5		1	0541.5		1				IIIB
	2021	2400	CULG				2042	2049					IIIN,W
04	0000	0721	CULG				0059	0101	1				IIIG
			CULG				0332	0334					IIIG,W
			CULG				0356	0356.5	1				IIIG,U
			CULG				0452						IIIB,W
			CULG				0602						IIIB,W
			CULG				0659		1				IIIG
	2021	2400	CULG				2029	2206					IIIN,W
			CULG				2030	2110					IS,W
			CULG				2110	2215					IN,W
			CULG	2313	2315	1	2311	2317	2	2312	2314	1	IIIGG
			CULG				2320	2325.5	1				IIIGG
			CULG				2328.5						IIIB,W
05	0000	0720	CULG	0239	0245								IN,W
	2235	2400	CULG				2303	2329					IIIN,W
			CULG				2325	2326	1				IIIG
06	0000	0720	CULG				0020	0020.5					I,W
			CULG				0127		1				IIIB
			CULG				0315	0720					IIIN,W
			CULG				0343.5	0347	1				IIIG
			CULG				0439	0440	1				IIIG
			CULG				0507.5	0508.5	1				IIIG,V
			CULG				0707		1				IIIB
	2020	2400	CULG										
07	0000	0720	CULG				0036.5						IIIB,W
			CULG				0218	0219.5					IIIG,W
			CULG				0226		2				IIIB
			CULG				0237	0720					IIIN,W
			CULG				0422	0422.5	2				IIIG,U
			CULG				0540	0719	1				IIIN
	2020	2400	CULG				2105.5	2229	1				IIIN
			CULG				2238	2400					IIIN,W
			CULG	2253	2400								IV
			CULG				2256	2257.5	1				IIIG,Z,V
			CULG							2257	2400	3	SWF
			CULG				2257.5	2258	2				UNCLF
			CULG				2259	2349	3	2304	2331.5	2	II
			CULG				2259	2330	1				IV
08	0000	0720	CULG	0000	0150	1							IV
			CULG				0054		1				IIIB
			CULG				0140	0225					IN,W
			CULG				0140	0334.5					IIIN,W
			CULG				0201		2				IIIB
			CULG				0215	0325	1				IIIN
			CULG				0227	0229.5	3	0227	0229	3	IIIG,V
			CULG				0329.5		2				IIIB
			CULG				0347	0348.5	3	0347	0347.5	2	IIIG
			CULG				0350	0351.5	2				IIIG
			CULG				0629.5	0632	1				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

OCTOBER 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
08			CULG				0637.5	0640.5	2				IIIG
			CULG				0649.5	0650.5	1				IIIG
	2020	2400	CULG				2034	2247					IIIN,W
			CULG				2051.5		1				IIIB
			CULG	2155.5	2156	1							DCIM
			CULG				2336	2336.5					IIIG
09	0000	0720	CULG				0038	0720					IIIN,W
			CULG	0206.5	0207								DCIM,W
			CULG				0658.5	0705	1				IIIGG
	2020	2400	CULG				2020	2400					IIIN,W
			CULG				2020	2348	1				IIIN
			CULG	2028	2028.5	1							DCIM
			CULG	2042		1	2042		1				IIIB
			CULG				2122	2123.5	1				IIIG
10	0000	0633	CULG				0000	0534					IIIN,W
			CULG				0036	0534	1				IIIN
			CULG				0234	0243	1				IIIS
			CULG	0411	0450								IS,W
			CULG				0532	0533.5	2	0532.5	0533	2	IIIG,Z,V
			CULG				0541	0633	1				IIIS
			CULG				0551	0552	3	0551.5	0552	3	IIIG
		0553	CULG	0552.5	0553	1	0552.5	0553	1				IIIG
			CULG	0553.5		1							IIIB
			CULG				0607.5		2				IIIB
			CULG				2019	2400					IIIS,W
	2019	2400	CULG	2019	2132		2019	2400	1				IS
			CULG				2025	2344	1				IIIN
			CULG				2159	2351	1				DCN
11	0000	0719	CULG				0000	0719					IIIS,W
			CULG				0020	0658	1				IIIN
			CULG	0045	0315								IN,W
			CULG				0052	0657	1				DC,N
			CULG	0315	0444	1							IS
			CULG							0336	0341	1	SWF
			CULG	0416.5	0417	1							DCIM
			CULG				0416.5	0417	1				IIIG,U
			CULG	0434.5	0435	1							DCIM
			CULG	0444	0626								IN,W
			CULG	0446	0446.5	2	0446	0447	1				IIIG,U
			CULG	0707.5	0708	1	0707.5	0708	1				IIIG
	2145	2400	CULG				2145	2400	1				DC,N
			CULG				2145	2151	2				IIIGG
			CULG				2151	2400					IIIS,W
			CULG	2158.5	2222	1							N,DG,IM
			CULG	2202	2400								IS,W
			CULG				2222	2400	1				IIIN
			CULG				2228	2302	2				IIIN
12			CULG				0000	0215	1				IS,DC
	0000	0718	CULG	0000	0055								IS,W
			CULG				0000	0344					IIIS,W
			CULG				0009	0718	1				IIIN
			CULG	0125.5	0127	2							DCIM
			CULG				0215	0718	1				IS,DC,C
			CULG							0231	0245	1	SWF
			CULG				0351	0357.5	2				IIIGG
			CULG	0431.5	0432.5	1	0432	0435.5	3	0432	0435	3	IIIGG,V
			CULG							0434.5	0442	2	SWF
			CULG	0435.5	0436.5	1							UNCLF
			CULG				0436	0439	1				II
			CULG				0439	0630	2				IIIN
			CULG				0457	0459	2	0458	0459	1	IIIGG
	0507		CULG	0507		1	0507	0507.5	1				IIIB
			CULG	0511.5			0511.5						IIIB,W
			CULG				0537.5		2	0537.5		1	IIIB
			CULG				0549.5		2	0549.5		1	IIIB
			CULG	0625.5	0718	3	0625.5	0718	3	0630	0647	3	IV

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
12			CULG							0627	0650	2	SWF
			CULG				0627	0715	3				II H
			CULG				2019	2220	2				IS,C
	2019	2400	CULG	2019	2400								IS,W
			CULG				2019	2400	1				IIIS
			CULG	2026.5	2028	1							DCIM
			CULG				2026.5	2027.5	2				IIIG
			CULG				2154.5	2157	2				IIIGG
			CULG				2220	2400	1				IS,C
			CULG				2324	2327	3	2324.5	2326	3	IIIGG
			CULG				2341.5	2342	2	2341.5	2342	1	IIIG
			CULG				2343	2343.5	2	2343	2343.5	2	IIIG
			CULG	2344	2348	1							IIIN
			CULG				2344	2345	3	2344	2345	2	IIIG
			CULG	2352.5	2354.5	2							DCIM
			CULG				2353	2354	2				IIIGG
13			CULG				0000	0718	1				IIIS
	0000	0718	CULG				0000	0718	1				IS,C,DC
			CULG	0000	0718								IS,W
			CULG				0001	0034	1				SCINT
			CULG				0009	0552	2	0039	0551	2	IIIN
			CULG	0021		3							DCIM
			CULG				0038.5	0040.5	3	0039	0040	3	IIIGG
			CULG	0304.5	0305.5	2	0304.5	0307.5	3	0305	0307	3	IIIG,V,U
			CULG							0307	0311	1	SWF
			CULG				0426.5	0427.5	3	0427	0427.5	2	IIIG
			CULG				0439		3	0439		2	IIIB
			CULG				0440	0441	3	0440	0441	3	IIIG
			CULG	0443.5	0450	2							IIIN
			CULG	0710.5	0718	3							DCIM
			CULG				0710.5	0713	3				IIIG,V
			CULG							0713	0718		SWF,W
			CULG				2019	2400	1				IIIS
			CULG	2019	2400								IN,W
	2019	2400	CULG				2019	2400	2				IS,C
			CULG	2021	2033	2							DCIM
			CULG				2023	2342.5	2				IIIN
			CULG	2123.5	2126	2	2123.5	2126	2				IIIG
			CULG				2256	2256.5	2	2256	2256.5	2	IIIG
			CULG	2303	2324.5	3							DCIM
			CULG				2307	2308.5	3	2307	2308.5	3	IIIG
			CULG				2310.5	2313	3	2311	2313	3	IIIGG
			CULG							2327	2342	1	IIIN
			CULG	2334.5		2							IIIB
			CULG	2339.5	2340	2	2339.5	2341	2	2339.5	2340	2	IIIG
14	0000	0418	CULG				0000	0718	1				IS,C
			CULG				0000	0718	1	0038	0407	1	IIIN
			CULG				0026	0637	2				IIIN
			CULG				0145		2	0145	0145.5	2	IIIB
			CULG	0215.5	0216	2							DCIM
			CULG	0316	0631	2							DCIM
			CULG	0316.5	0317.5	2							UNCLF
			CULG	0351	0352	2	0351	0355.5	3	0351	0355.5	3	IIIGG
	2018	2400	CULG				2018	2400	2				IS,C
			CULG	2038	2310								IN,W
			CULG				2038	2038.5	1				IIIG
			CULG				2046	2326	2				IIIN
			CULG	2147.5	2150	2	2147	2149.5	2	2149.5	2150	2	IIIGG
			CULG				2153	2153.5	3	2153	2153.5	3	IIIG
			CULG	2300.5	2303	3							DCIM
			CULG	2310	2400	1			1				IS
15	0000	0718	CULG				0000	0718	2				IS,C
			CULG	0009	0009.5	1							DCIM
			CULG							0230.5	0231	1	IIIB
			CULG	0340	0341	1							DCIM
			CULG							0411.5			IIIB,W
			CULG	0416	0416.5	2	0416	0416.5	2				IIIG

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
15			CULG	0417	0633	1							IN
			CULG	0443	0446	3	0443	0447.5	3	0443.5	0447.5	2	IIIGG,V
			CULG							0446	0453		SWF,W
			CULG	0448.5	0454	1	0447.5	0454.5	2				IIIGG
			CULG	0517.5	0519.5	1							DCIM
			CULG				0517.5	0518	2				IIIG
			CULG	0552.5	0556.5	2	0553	0556.5	2	0552	0556.5	2	IIIGG
			CULG							0556	0603	1	SWF
			CULG	0557.5	0558	2	0557.5	0558.5	1				IIIG
			CULG				0607.5	0608	3	0607.5	0608	2	IIIG
			CULG	0638.5	0639	2							DCIM
	2019	2400	CULG				2019	2020.5	2				V
			CULG				2020	2207	1				IS,DC
			CULG				2020	2207					IIIS,W
			CULG				2022	2400	1				IIIN
			CULG				2036	2036.5	2				IIIG
			CULG	2037	2038.5	1	2037	2044.5	3				IIIGG
			CULG				2049	2049.5	2				IIIG
			CULG				2146	2154					N,RSDP,W
			CULG				2207	2400					IIIN,W
			CULG				2207	2312					DC,N
			CULG				2207	2312					IS,W
			CULG				2339	2340	2	2339	2339.5	2	IIIG
16	0000	0718	CULG				0000	0718					IIIN,W
			CULG	0000	0054								IS,W
			CULG				0002	0409	1				IIIN
			CULG	0054	0125		0036	0718					IN,W
			CULG	0054	0125								3
			CULG				0153.5	0154	2				IIIG
			CULG				0205	0235	1				IS,DC
			CULG				0234.5	0235	1	0234.5	0235	1	IIIG
			CULG	0240	0241								IIIN,W
			CULG				0313		2	0313		2	IIIB
			CULG				0340.5		1				DP
			CULG							0351	0357		SWF,W
			CULG	0353.5	0354	2	0353	0354.5	3				IIIG
			CULG	0402	0403.5	1							IIIN
			CULG				0600.5	0601.5	3				IIIG,V
			CULG				2018	2400					IIIS,W
			CULG				2018	2343.5	1				IIIN
	2018	2400	CULG				2018	2400	1				IS,C,DC
17			CULG				0000	0717					IIIS,W
	0000	0717	CULG				0000	0717	1				IS,C,DC
			CULG				0125.5	0126	1	0125.5	0126.5	1	IIIG
			CULG				0136.5	0649.5	1				IIIN
			CULG				0517	0518	2	0517	0518	2	IIIG
			CULG				2018	2400					IIIS,W
	2018	2400	CULG				2018	2400					IS,C,W
			CULG				2046	2345	1				IIIN
			CULG	2219	2220	2	2219	2219.5	2	2219.5		1	IIIG
			CULG				2239	2240	2	2239	2240	1	IIIG
18			CULG				0000	0222					IIIN,W
	0000	0222	CULG				0000	0222	1				IS,C
			CULG				0033	0100	1				IIIN
	0353	0718	CULG				0353	0718	1				IS,C
			CULG				0353	0600					IIIN,W
			CULG				0415.5	0717.5	1				IIIN
			CULG	0451.5	0452	1	0451.5	0452	1				IIIG
			CULG				0600	0717					IIIS,W
			CULG				0620	0658					N,DP
			CULG				0645	0718	1				N,RSDP
			CULG				2017	2052					IIIN,W
	2017	2052	CULG				2017	2052	1				IS,C,DC
			CULG				2023	2027	1				RSDP,N
			CULG				2318	2400					IIIS,W
	2318	2400	CULG				2318	2400	1				IS,C
			CULG				2326	2355	1				RSDP,N

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
18			CULG				2329.5	2330.5	2	2329.5	2330.5	1	IIIG
19	0000	0104	CULG				0000	0104	1				IS,C
			CULG				0000	0104					IIIS,W
			CULG	0005.5	0007.5								DCIM,N
			CULG				0006	0006.5	3				IIIB
			CULG	0007	0007.5	1	0007	0008	2	0007	0008	1	IIIG
			CULG				0014	0059	1				N,RSDP
			CULG				0018.5	0104	1				IIIN
			CULG				0050	0050.5	1				DP
			CULG				0053		1				RSDP
			CULG				0102	0103	2				IIIG
	0140	0717	CULG				0140	0625	1				IIIN
			CULG				0140	0717	1				IS,C,DC
			CULG				0140	0717					IIIS,W
			CULG				0147	0319	1				RSDP,N
			CULG				0216	0704	1				IIIN
			CULG	0255	0442								IN,W
			CULG							0313	0331	1	SWF
			CULG				0318.5		2	0318.5		1	IIIB
			CULG				0326	0331	1				II
			CULG				0613	0613.5	2				IIIG
			CULG				0626		2				IIIB
			CULG	0657		2	0657	0657.5	2				IIIG,V
	2017	2400	CULG				2017	2400	1				IS,C
			CULG				2017	2227	1				UNCLF
			CULG	2017	2040								IS,W
			CULG				2017	2400					IIIS,W
			CULG	2037	2037.5	2							DCIM
			CULG				2352	2352.5	2	2352	2353	2	IIIG
20	0000	0716	CULG				0000	0716	1				IS,C
			CULG				0000	0716					IIIS,W
			CULG				0036.5	0650	1				IIIN
			CULG	0211	0508	1							IN
			CULG	0216		1	0216	0216.5	3	0216	0216.5	2	IIIG
			CULG				0228.5		1	0228.5		1	IIIB
			CULG	0233.5	0234	1	0233	0234	2				IIIG
			CULG	0303	0303.5	2	0303	0304	2				IIIG
			CULG				2017	2400					IIIS,W
			CULG				2017	2256	1	2046	2255	1	IIIN
	2017	2400	CULG				2017	2400	1				IS,C
			CULG				2020	2342	1				N,RSDP
			CULG				2026	2333	1				N,DP
			CULG	2030	2400								IN,W
			CULG				2030.5	2031.5	2	2030	2031.5	2	IIIG
			CULG				2056		2				IIIB
			CULG				2133	2134	2				IIIG
			CULG	2253.5		1							DCIM
			CULG				2353		2	2353		2	IIIB
			CULG	2357.5	2358	1	2357.5	2358.5	2				IIIG
21			CULG				0000	0717					IIIS,W
	0000	0717	CULG				0000	0717	1				IS,C,DC
			CULG	0000	0717								IN,W
			CULG				0007	0643	1	0007	0549	1	IIIN
			CULG				0009	0011					N,DP,W
			CULG				0009	0717	1				RSDP,N
			CULG				0017		2	0017	0017.5	2	IIIB
			CULG	0046	0047	2							IIIG
			CULG	0150	0152	2	0150.5	0152	2				IIIG
			CULG				0209.5	0210.5	3	0210	0211	3	IIIG
			CULG	0222.5	0224.5	1	0222.5	0225	3	0222.5	0224.5	3	IIIGG
			CULG				0334	0335	2	0334.5	0335.5	3	IIIG
			CULG				0353	0356	3	0354	0355.5	2	IIIGG
			CULG				0359	0359.5	3	0359	0400	3	IIIG
			CULG				0513		2	0513		1	IIIB
			CULG				0546.5	0547	2	0546.5	0547	1	IIIG
	2221	2400	CULG				2221	2400					IN,W,C
			CULG				2221	2400					IIIN,W

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
21			CULG				2231	2232	1				DC
			CULG	2338.5	0339.5	1	0339	0341.5	2	0339.5	0342	3	IIIGG
22	0000	0716	CULG				0000	0716					IS,W,C
			CULG				0000	0716					IIIN,W
			CULG				0023	0024	1				IIIG,Z
			CULG	0041	0042	1							DCIM
			CULG	0045	0047	1	0045	0047	2	0045.5	0046.5	1	IIIG
			CULG	0049	0050	2	0049	0050	3				IIIG
			CULG	0049	0050	1							DCIM
			CULG				0102	0106	1				DC
			CULG	0143	0143.5	1	0143	0143.5	1				IIIG,Z
			CULG	0258.5	0259	1	0258.5	0259.5	2				IIIG,U
			CULG				0501.5	0502	1				IIIG
	2017	2400	CULG				2139	2141	1	2139	2141	1	IIIG
			CULG				2213.5						IIIB,W
23	0000	0716	CULG				0002						IIIB,W
			CULG	0040	0040.5		0040	0040.5					IIIG,W
	2016	2400	CULG				2016	2256					IN,W
			CULG				2023	2352					IIIN,W
			CULG				2106	2106.5	2	2106	2106.5	2	IIIG
			CULG				2108.5	2113	1	2109	2109.5	1	IIIGG
			CULG				2314	2314.5	2	2314	2315	2	IIIG
			CULG				2339.5	2340	1	2339.5	2340	2	IIIB
24	0000	0723	CULG				0010	0723		0010	0551		IIIN,W
			CULG				0041.5	0622	1				IIIN
			CULG				0048.5	0049	1	0049	0049.5	1	IIIG
			CULG				0130.5	0131.5	2	0130.5	0131.5	1	IIIG,V
			CULG				0141.5	0142	2	0141.5	0142	1	IIIB
			CULG				0416		1	0416		1	IIIB
			CULG				2043.5	2044.5	2				IIIG,V
			CULG				2047	2047.5					IIIB,W
	2016	2400	CULG	2104	2400		2016	2027					IN,W
			CULG	2317.5	2318.5		2317.5	2318.5					IIIG,W
			CULG				2334.5	2335					IIIG,W
			CULG				2340	2341	1	2340	2341	2	IIIG
			CULG				2341	2400					IIIN,W
			CULG							2344	2355		SWF,W
			CULG	2355.5	2357.5	1							CONT
25	0000	0715	CULG				0000	0003					IIIN,W
			CULG				0005	0018				II	W
			CULG	0013	0327								IN,W
			CULG				0103	0700					IIIN,W
			CULG				0320	0450					IN,W
			CULG	0336	0701	1							DCIM,N
			CULG				0345	0345.5	1				IIIG,U
			CULG				0416.5	0417.5	1				IIIG
			CULG	0621	0622.5	2							IS
			CULG				0659.5	0700	1				IIIG
	2019	2400	CULG	2140	2152		2219	2220					IN,W
			CULG	2316	2316.5	1							DCIM
			CULG				2347.5	2348	1				IIIG
26	0000	0716	CULG				0244	0245					IIIG,W
	2016	2400	CULG				2039	2039.5	1				IIIG
			CULG				2104						IIIB,W
27	0000	0716	CULG				0144	0656					IIIN,W
			CULG	0145	0146								IIIG,W
			CULG	0404	0500								IIIN,W
			CULG	0405	0406.5	2	0405	0407.5	2				IIIG,V,U
			CULG				0528.5	0529	2				IIIG
			CULG				0616	0617	1				IIIG
			CULG				0657.5		1				IIIB
	2016	2400	CULG				2114	2115	3	2114	2115	2	IIIG
			CULG				2115	2122					IIIN,W
			CULG				2242.5	2244	1				IIIG

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
27			CULG				2256	2331					IN,W
28	0000	0716	CULG				0003.5	0651					IIIN,W
			CULG				0042	0042.5	1				IIIG
			CULG	0109.5	0110		0109.5	0110					IIIG,W
			CULG				0243	0330					IN,W
			CULG				0255.5	0256	1				IIIB,U
			CULG	0405	0415								IS,W
			CULG				0429	0716					IN,W
			CULG				0445	0535					IS,W
			CULG				0644.5	0647	2				IIIG,V
	2016	2400	CULG				2135.5	2136.5					IIIG,W
			CULG				2308	2308.5					IIIG,W
			CULG				2345	2346	1				IIIG,V
29	0000	0716	CULG				0216	0716					IIIN,W
			CULG				0237	0600					IN,W
			CULG				0303.5	0304.5	1				IIIG
			CULG				0612	0613	2				IIIG
			CULG				0628	0629.5	2				IIIB,V
			CULG				0701.5		1				IIIB
			CULG				0705.5	0708	3				IIIG,V
	2016	2400	CULG				2103	2400		2342	2400		IIIN,W
	2016	2400	CULG				2103	2400		2342	2400		IIIN,W
			CULG				2354	2356.5	2	2354	2356.5	2	IIIGG
30	0000	0715	CULG				0000	0449					IIIN,W
			CULG				0002	0059	1				IIIN,W
			CULG				0225	0225.5	1				IIIG
			CULG				0245.5		1	0245.5	0246	1	IIIB
			CULG	0552.5	0553	1	0552.5	0553	2				IIIG
	2016	2400	CULG				2047	2400					IIIN,W
			CULG				2047.5		1				IIIB
31	0000	0715	CULG				0011.5	0148					IIIN,W
			CULG				0446.5	0447					IIIG,W
			CULG	0446.5	0447	1							IIIG
			CULG	0539.5	0545	1							DCIM
			CULG				0541	0541.5	1				IIIG,V
			CULG				0549	0715					IN,W
	2016	2400	CULG				2018	2030					IIIS,W
			CULG				2030	2400					IIIN,W
			CULG				2033.5		1				IIIB
			CULG				2319.5	2320	1				IIIG
			CULG				2353		2				IIIB

The symbols used under the column heading SPECTRAL TYPE have the following definitions:

B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of burst
C = Underlying continuum (particularly with Type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity
DCIM = Fast drift

COSMIC RAY INDICES

(Neutron Monitors)

OCTOBER 1981

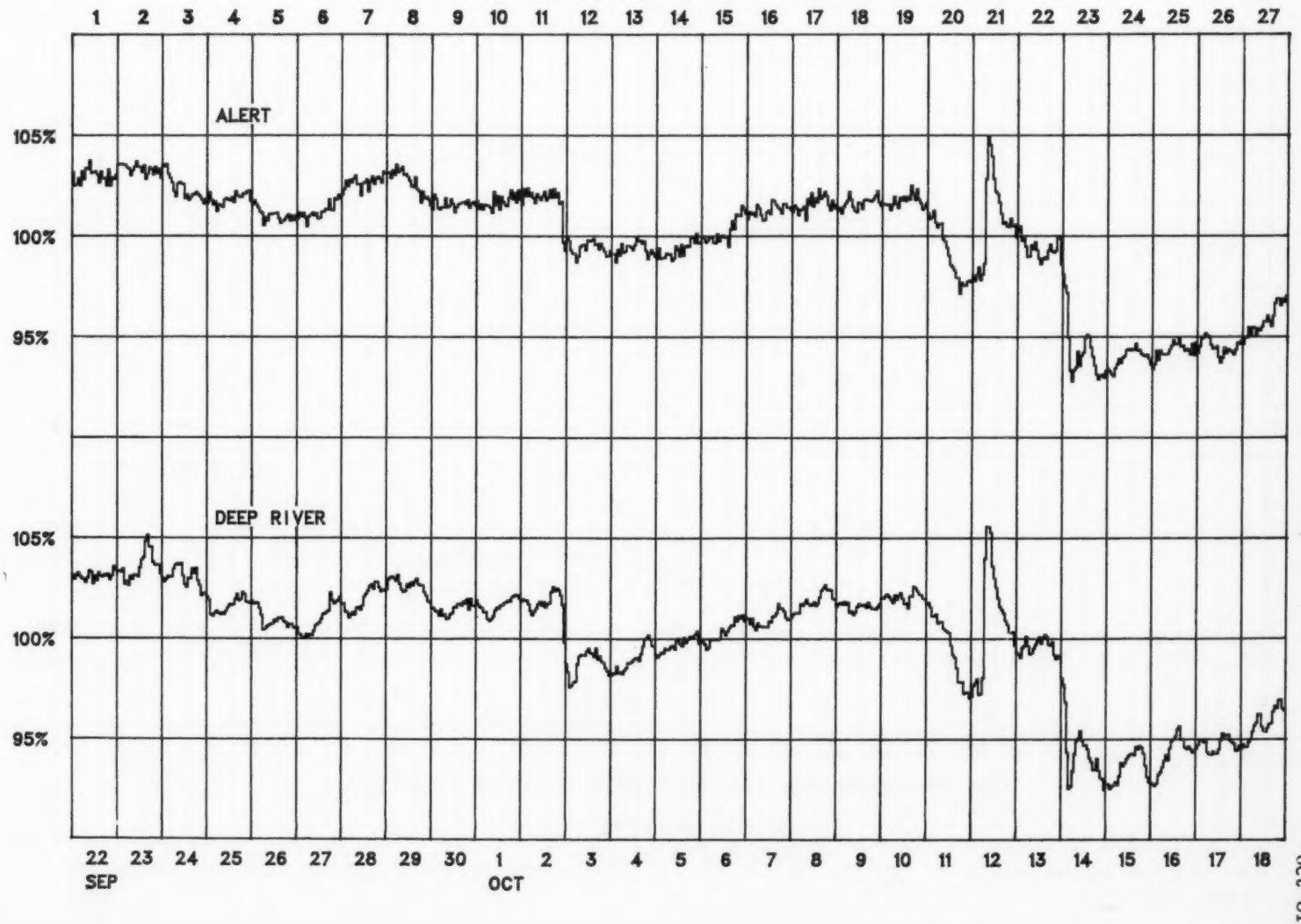
Oct 1981	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	TOKYO Average (cts/h)/100	HUANCAYO Average (cts/h)/100
1	6657.5	6272.1		3678.6		1714.3(38)
2	6662.6	6281.9		3684.3		1710.0
3	6509.0	6095.8		3586.9		1686.3
4	6504.0	6110.0		3586.9		1694.3
5	6503.2	6154.0		3621.5		1699.8
6	6563.9	6191.5		3636.2		1708.4
7	6630.1	6230.6		3665.6		1712.7
8	6651.0	6286.1		3719.2		1729.2
9	6653.2	6270.2		3699.3		1718.8(34)
10	6660.0	6299.7		3712.8		1728.0
11	6488.7	6149.8		3646.2		1698.7
12	6592.7	6225.6		3603.8		1686.0
13	6505.0	6145.7		3582.6		1696.8
14	6170.5	5823.9		3391.5		1656.3
15	6149.2	5776.8		3359.7		1653.8
16	6174.2	5813.7		3370.3		1656.8
17	6184.6	5845.1		3391.6		1663.0
18	6273.0	5907.6		3427.9		1673.6
19	6360.8	6011.3		3487.7		1689.6
20	6297.5	5997.8		3528.4		1688.1
21	6258.3	5880.9		3437.8		1673.3
22	6274.6	5942.5		3481.2		1686.5(38)
23	6370.1	6001.5		3531.2		1701.1
24	6446.3	6080.2		3566.5		1704.3
25	6515.7	6138.5		3591.0		1714.9
26	6552.2	6172.5		3618.3		1720.7
27	6544.8	6138.4		3603.6		1710.3
28	6535.0	6152.2		3598.7		1702.8
29	6521.7	6160.6		3604.9		1704.8
30	6548.5	6179.5		3622.5		1712.7
31	6571.7	6203.8		3631.6		1722.1
MEAN	6462.3	6094.9		3570.1		1697.3

Please see SGD 448 Part I, page 149 (December 1981 issue).

Please see SGD 448 Part I, page 149 (December 1981 issue).

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

COSMIC RAY INDICES
(Neutron Monitor)



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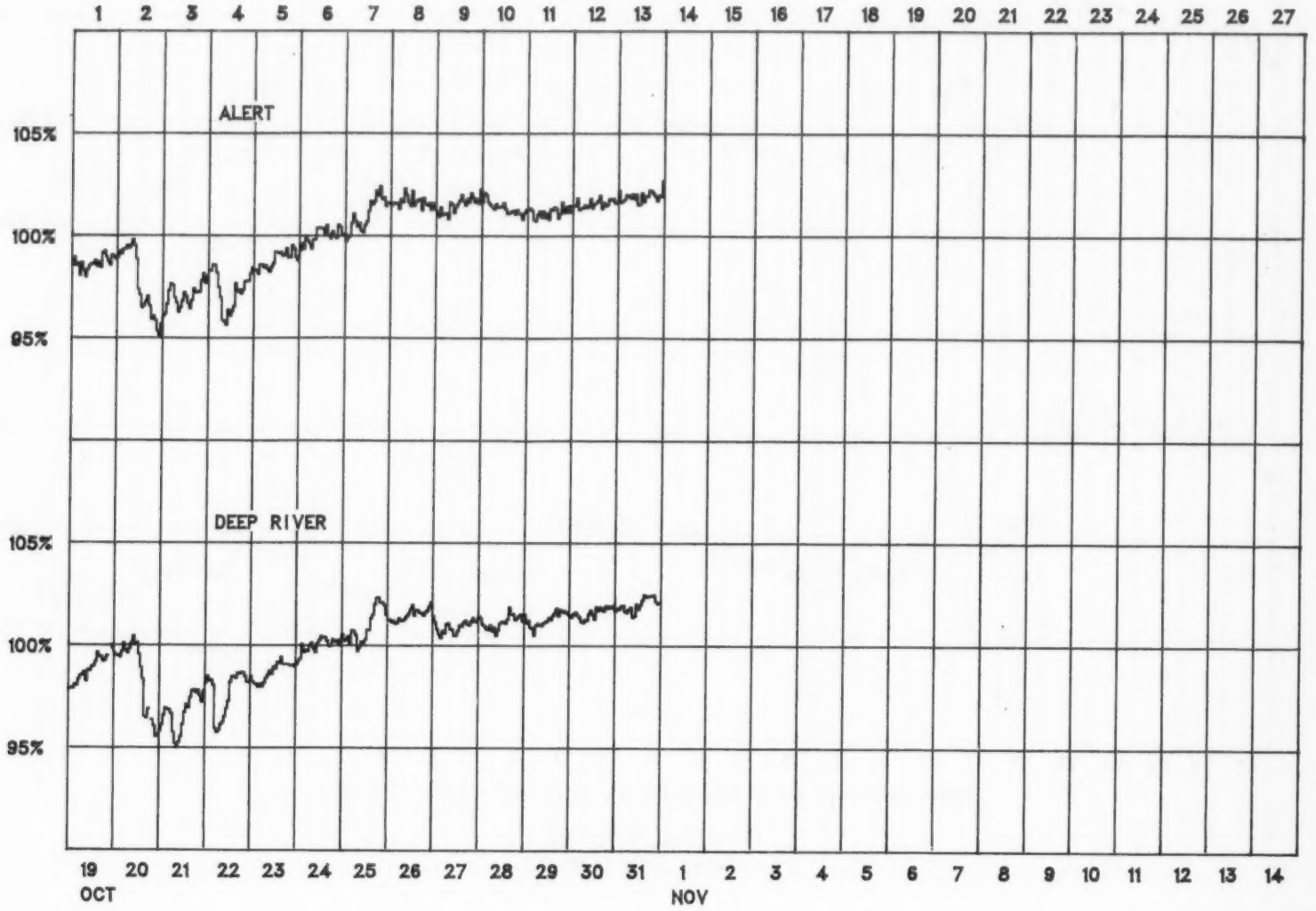
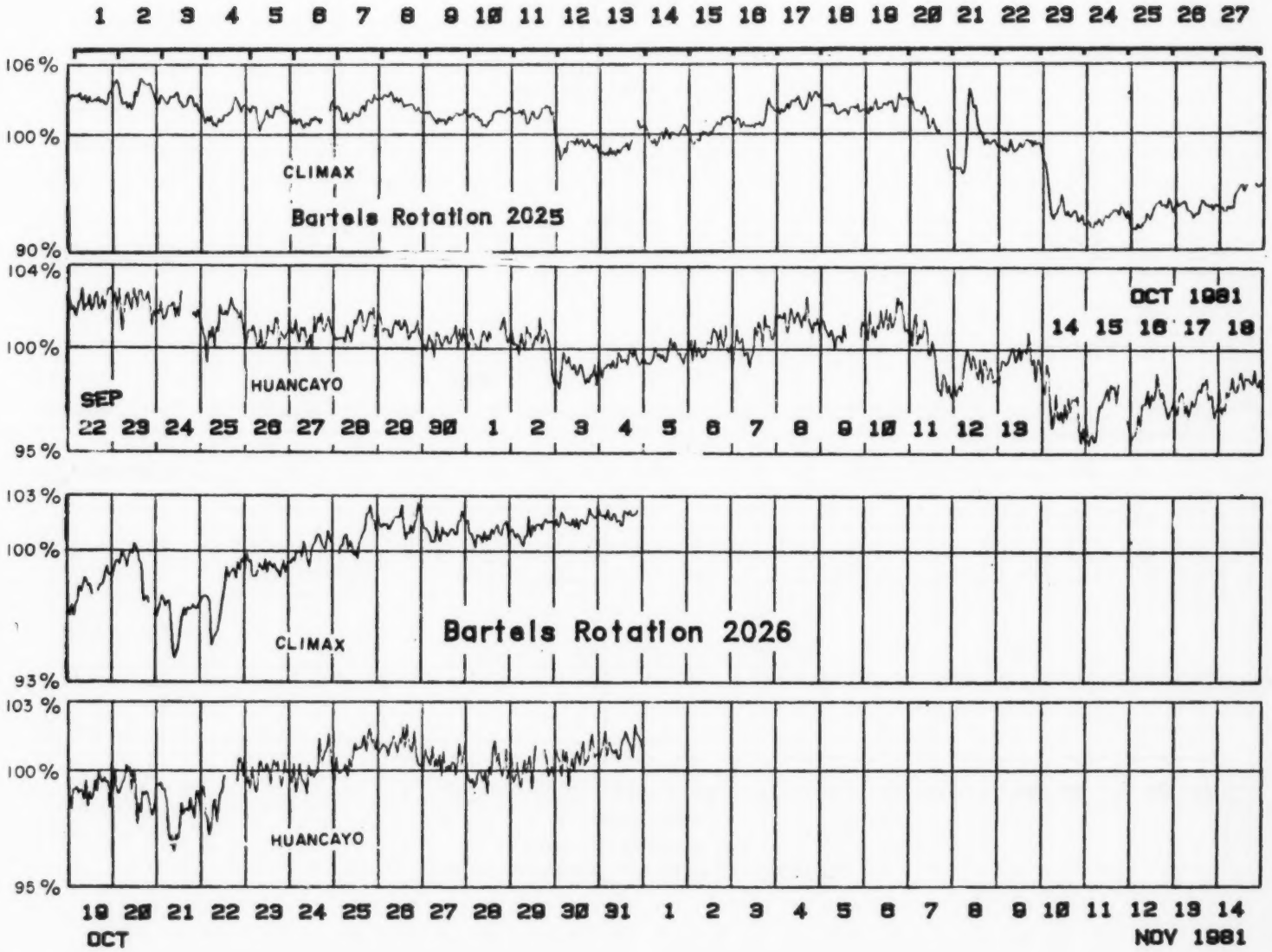
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2026 (October 1981–November 1981)



COSMIC RAY INDICES
(Neutron Monitor)



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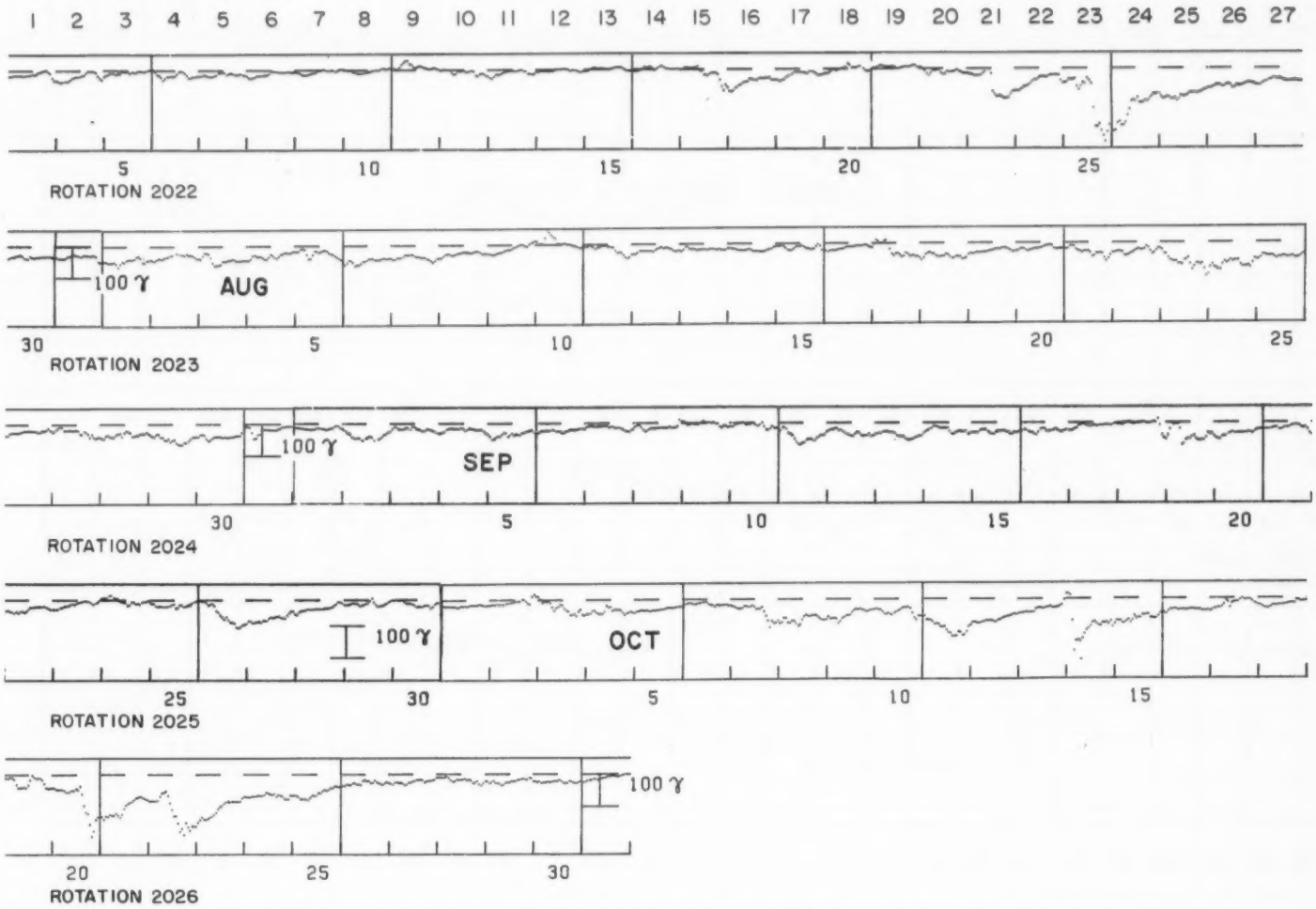
GEOMAGNETIC ACTIVITY INDICES

Hourly Equatorial Dst

by Bartels Rotation



Note: Both the sensitivity indicator placed on the last day of the month and the zero reference level change from month to month.

HOURLY EQUATORIAL Dst VALUES (PROVISIONAL)

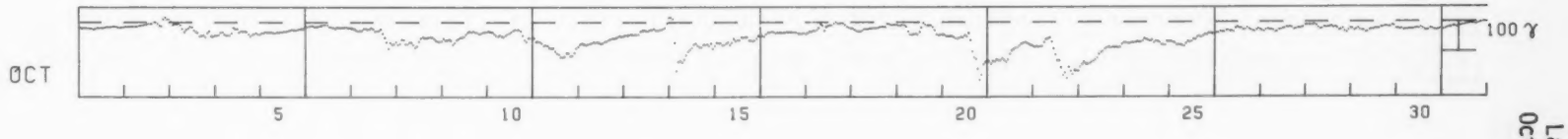
NASA/GODDARD SPACE FLIGHT CENTER

OCTOBER 1981

(Time-UT)

(Units-Gammas)

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-18	-20	-19	-19	-20	-20	-21	-24	-22	-18	-20	-18	-20	-17	-15	-16	-16	-14	-13	-15	-17	-18	-16	-17
2	-14	-15	-14	-13	-14	-14	-15	-12	-11	-10	-9	-8	-5	-5	-5	1	0	-5	-12	-13	10	16	10	10
3	2	-9	-6	-6	-5	-10	-22	-34	-25	-21	-14	-16	-28	-33	-36	-47	-45	-44	-50	-37	-30	-46	-46	-44
4	-44	-42	-35	-33	-40	-44	-43	-44	-37	-18	-23	-22	-35	-30	-32	-31	-33	-40	-47	-42	-39	-37	-40	-41
5	-37	-36	-33	-34	-35	-33	-36	-37	-34	-35	-33	-33	-31	-31	-29	-27	-25	-25	-27	-25	-23	-22	-22	-18
6	-15	-13	-12	-12	-14	-15	-13	-12	-11	-9	-8	-10	-15	-17	-18	-22	-17	-18	-19	-17	-17	-16	-15	-19
7	-21	-23	-27	-30	-29	-28	-21	-21	-24	-23	-19	-23	-31	-30	-29	-24	-38	-52	-67	-88	-68	-75	-73	-66
8	-75	-72	-59	-59	-73	-74	-67	-68	-76	-85	-80	-64	-54	-49	-52	-53	-50	-49	-51	-56	-62	-64	-65	-63
9	-55	-62	-60	-59	-62	-75	-68	-60	-56	-51	-50	-48	-40	-34	-31	-33	-30	-34	-35	-38	-37	-34	-33	-32
10	-30	-32	-34	-39	-45	-47	-43	-47	-49	-44	-39	-37	-33	-28	-25	-25	-25	-30	-44	-60	-65	-53	-53	-52
11	-53	-65	-65	-66	-71	-79	-77	-79	-87	-88	-87	-97	-105	-108	-116	-117	-114	-103	-104	-113	-112	-102	-87	-82
12	-74	-71	-74	-76	-74	-72	-70	-67	-68	-66	-69	-72	-70	-65	-63	-60	-57	-55	-54	-52	-49	-46	-48	-46
13	-43	-44	-42	-40	-42	-42	-41	-40	-31	-28	-27	-30	-30	-26	-25	-22	-27	-27	-26	-24	-21	-18	-3	16
14	16	12	-68	-163	-133	-130	-135	-125	-110	-98	-92	-86	-75	-71	-79	-84	-85	-76	-76	-74	-80	-71	-86	-79
15	-69	-70	-70	-77	-76	-71	-67	-76	-68	-57	-63	-60	-61	-51	-52	-50	-50	-62	-62	-63	-61	-55	-46	-43
16	-46	-48	-40	-35	-35	-32	-34	-37	-35	-35	-36	-36	-35	-33	-34	-34	-35	-35	-36	-38	-39	-38	-37	-40
17	-37	-33	-32	-29	-29	-26	-19	-7	-12	-29	-15	-12	-11	-11	-5	0	-5	-5	-3	-5	-10	-15	-18	-21
18	-22	-26	-30	-31	-32	-28	-23	-22	-23	-21	-21	-20	-19	-18	-16	-15	-15	-15	-6	-7	-10	-10	-9	-9
19	-12	-12	-9	-11	-14	-32	-41	-41	-39	-38	-41	-33	-17	-2	-8	-12	-11	-11	-16	-28	-41	-44	-41	-41
20	-42	-47	-47	-47	-47	-50	-55	-56	-53	-49	-51	-44	-47	-37	-61	-98	-118	-123	-157	-194	-177	-141	-134	-132
21	-132	-140	-131	-133	-126	-129	-128	-121	-128	-134	-125	-107	-96	-91	-87	-85	-79	-73	-70	-68	-71	-74	-78	-80
22	-84	-82	-83	-83	-81	-68	-58	-56	-52	-66	-89	-110	-130	-129	-153	-179	-169	-188	-151	-164	-175	-162	-162	-163
23	-150	-142	-134	-140	-141	-138	-134	-131	-126	-119	-108	-101	-97	-90	-86	-83	-87	-84	-85	-84	-86	-84	-74	-69
24	-69	-71	-71	-68	-68	-67	-65	-66	-66	-63	-56	-59	-62	-63	-60	-69	-63	-65	-68	-75	-77	-77	-84	-85
25	-64	-67	-70	-77	-76	-77	-79	-81	-72	-65	-67	-65	-58	-58	-51	-47	-51	-47	-42	-41	-37	-37	-39	-37
26	-36	-36	-31	-33	-34	-28	-27	-31	-31	-33	-21	-17	-21	-20	-26	-25	-19	-24	-27	-30	-32	-27	-23	-26
27	-29	-32	-26	-24	-26	-26	-28	-34	-32	-26	-25	-22	-21	-17	-18	-17	-18	-25	-23	-20	-21	-19	-17	-11
28	-10	-11	-10	-10	-8	-12	-19	-24	-22	-17	-18	-18	-16	-14	-19	-17	-21	-28	-26	-22	-32	-36	-28	-22
29	-23	-29	-25	-21	-27	-29	-29	-35	-33	-27	-25	-25	-22	-23	-22	-18	-17	-15	-14	-17	-16	-12	-13	-23
30	-23	-26	-23	-28	-26	-26	-24	-25	-25	-23	-21	-23	-18	-22	-27	-29	-27	-22	-23	-27	-28	-27	-24	-23
31	-26	-24	-20	-18	-18	-15	-14	-18	-17	-13	-12	-11	-8	-7	-6	-5	-7	-9	-6	-4	-2	0	-1	-1



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Oct 81

PRINCIPAL MAGNETIC STORMS

OCTOBER 1981

OBS. 3 letter code	GEOMAG-NETIC LATI-TUDE	COMMENCEMENT DAY	hr min (UT)	TYPE	SC - AMPLITUDES D(')	H(γ)	Z(γ)	MAXIMUM 3 HOUR - INDEX K DAY (3 HOUR PERIOD)	K	RANGES D(')	H(γ)	Z(γ)	UT END DAY	HOUR
SIT	60.0N	02	2022	SC*	-21	55.*	-66.*	03(5)	7	--	580	450	03	22
NEW	55.1N	02	2022	SC*	11	57	10	03(5)	5	30	145	156	05	01
FRD	49.6N	02	2022	SC	3	-127	-25	02(7)	7	22	217	47	05	--
IRK	41.0N	02	2027	SC	13	58	8	02(7) 03(3,4,5,6,7)	5	18	133	35	03	23
SJG	29.9N	02	2022	SC	1	34	17	02(7)	5	11	102	31	04	22
HON	21.1N	02	1924	SC	3	47	18	02(7) 03(4)	5	10	96	45	04	13
JAI	17.3N	02	2021	SC	- 2.3	55	-13			9	149	56	04	13
SHL	14.7N	02	2021	SC	- .7	45	14			9	160	72	04	13
UJJ	13.5N	02	2021	SC	- 1.3	59	-14			7	155	53	04	13
ABG	09.5N	02	2021	SC	- 1.5	45	-11	03(5)	6	6	153	61	04	13
HYB	07.6N	02	2022	SC	- .8	46	- 3	03(5)	6	7	179	51	04	22
GUA	04.0N	02	2022	SC	--	43	-12	02(7)	5	10	170	50	03	18
ANN	01.5N	02	2021	SC	- 1.9	51	26			6	277	116	04	13
HUA	00.6S	02	2022	SC*	4	216	-23	03(6)	7	10	373	53	03	23
TRD	01.1S	02	2021	SC	.2	47	56			3	347	153	04	13
PMG	18.6S	02	2022	SC	2.2	50	30	03(3,4,6)	5	8	120	70	04	15
HER	33.7S	02	2021	SC	7	60	46	02(7) 03(4)	5	29	137	72	03	24
GNA	43.2S	02	2022	SC*	13.9*	34	49.*	02(7) 03(4,5)	5	20	110	170	04	00
KGL	56.5S	02	2021	SC*	15	53	17	02(7) 03(4,5)	5	--	--	--	04	00
COL	64.6N	03	04--	..	..	..	..	03(5)	7	305	1640	770	04	22
GNA	43.2S	06	1555	SC	1.1	12	4	07(7)	6	20	100	110	08	12
SIT	60.0N	07	08--	..	..	..	..	08(3)	7	--	--	410	09	14
NEW	55.1N	07	0829	..	..	..	..	08(3,4)	5	30	136	221	10	02
FRD	49.6N	07	01--	..	..	..	..	07(7) 08(4) 11(4,5)	5	25	168	104	12	--
IRK	41.0N	07	10--	..	..	..	..	07(6,7) 08(3,4)	5	24	113	53	09	17
JAI	17.3N	07	0930	..	..	..	..			9	105	52	08	13
SHL	14.7N	07	0930	..	..	..	..			7	123	79	08	13
UJJ	13.5N	07	0930	..	..	..	..			7	122	53	08	13
ABG	09.5N	07	0930	..	..	..	..	07(7)	6	6	140	58	08	13
HYB	07.6N	07	0300	..	..	..	..	07(7)	6	7	184	36	09	22
GUA	04.0N	07	1944	..	..	..	..	08(2)	5	10	180	30	08	14
ANN	01.5N	07	0930	..	..	..	..			6	213	73	08	13
HUA	00.6S	07	0346	..	..	..	..	07(7)	6	10	355	77	08	23
TRD	01.1S	07	0930	..	..	..	..			3	259	123	08	13
PMG	18.6S	07	09--	..	..	..	..	08(2,4)	5	13	140	80	09	09
COL	64.6N	10	03--	..	..	..	..	10(4,6) 11(3,4,5)	6	156	1230	900	12	13
SIT	60.0N	10	03--	..	..	..	..	11(5)	7	--	--	570	12	10
NEW	55.1N	10	02--	..	..	..	..	11(3)	7	60	280	370	12	12
IRK	41.0N	10	06--	..	..	..	..	11(5)	6	29	141	65	12	11
SJG	29.9N	10	1435	SC	- .5	8	2	10(6)	5	6	127	41	12	07
JAI	17.3N	10	0400	..	..	..	..			8	164	49	11	23
SHL	14.7N	10	0400	..	..	..	..			7	197	73	11	23
UJJ	13.5N	10	0400	..	..	..	..			6	173	53	11	23
ABG	09.5N	10	0400	..				10(7) 11(4,6)	5	7	190	54	11	23
HYB	07.6N	10	0500	..	..	..	..	11(5)	6	9	225	49	12	12
ANN	01.5N	10	0400	..	..	..	..			5	259	90	11	23
HUA	00.6S	10	1200	..	..	..	..	10(6)	6	11	347	40	11	20
TRD	01.1S	10	0400	..	..	..	..			4	328	100	11	23
TOO	46.7S	10	20--	..	..	..	..	03(2,3,4,5)	5	26	120	50	03	22
TOO	46.7S	10	08--	..	..	..	..	11(5,6)	5	17	110	80	12	11
KGL	56.5S	10	1435	SC	- 3	21	10	11(5,6)	7	--	--	--	12	12
GUA	04.0N	11	0708	..	..	..	..	11(3)	5	--	200	40	11	19
PMG	18.6S	11	06--	..	..	..	..	11(4,5)	5	10	130	80	12	11
KGL	56.5S	11	0708	SC*	- 9	-32	-10	11(5,6)	7	--	--	--	12	12
COL	64.6N	13	07--	..	..	..	..	14(1) 15(5)	7	144	1810	880	15	19
SIT	60.0N	13	2242	SC*	22	* -82.*	-30.*	14(2)	8	--	--	600	16	01
NEW	55.1N	13	2242	SC*	3	48	3	14(1,2)	8	65	648	474	16	12
FRD	49.6N	13	2241	SC*	2	25	- 6	14(1)	6	34	211	130	18	--
IRK	41.0N	13	2242	SC	9	75	10	14(1)	8	45	415	51	16	10
SJG	29.9N	13	2240	SC	2	21	4	14(1)	7	10	245	48	15	07
HON	21.1N	13	2239	SC	1	39	13	14(1)	7	14	268	74	16	11
JAI	17.3N	13	2241	SC	- 2.4	60	-15			13	231	67	15	01
SHL	14.7N	13	2241	SC	- 1.3	55	17			9	273	68	15	01
UJJ	13.5N	13	2241	SC	- 1.6	70	-17			10	243	64	15	01
ABG	09.5N	13	2241	SC	- 1.9	55	-17	14(1)	6	10	187	75	15	01
HYB	07.6N	13	2241	SC	- 1.4	62	- 4	14(1)	8	10	239	44	16	09
GUA	04.0N	13	2240	SC	--	56	-12	14(1)	8	10	300	80	15	09
ANN	01.5N	13	2241	SC	- 3.1	74	40			9	223	130	15	01
HUA	00.6S	13	2240	SC	3	79	13	14(1)	7	9	627	59	15	04
TRD	01.1S	13	2241	SC	- .5	61	74			5	229	223	15	01
PMG	18.6S	13	2240	SC	- 2.9	50	37	14(1)	7	16	230	140	15	18
HER	33.7S	13	2240	SC	5	76	48	13(8) 14(1,2)	6	45	159	212	14	24
GNA	43.2S	13	2240		10.5	51	51	14(1)	8	60	370	300	16	11
TOO	46.7S	13	17--	..	..	..	..	14(1)	7	46	240	70	16	09
KGL	56.5S	13	2240	SC	15	74	34	14(1,2,8)	9	--	--	--	15	14
HUA	00.6S	15	1142	SC	1	24	--	15(5,6)	6	5	337	55	16	07
HYB	07.6N	17	0500	..	..	..	..	17(4)	5	8	95	49	18	04
GUA	04.0N	17	0511	..	..	..	..	17(3)	5	--	60	20	17	22
HUA	00.6S	17	0512	..	..	..	..	17(6)	6	7	323	40	18	01
HER	33.7S	17	06--	..	..	..	..	17(4)	5	32	88	70	17	22
KGL	56.5S	17	05--	..	..	..	..	17(3,4)	4	--	--	--	18	06

PRINCIPAL MAGNETIC STORMS

OCTOBER 1981

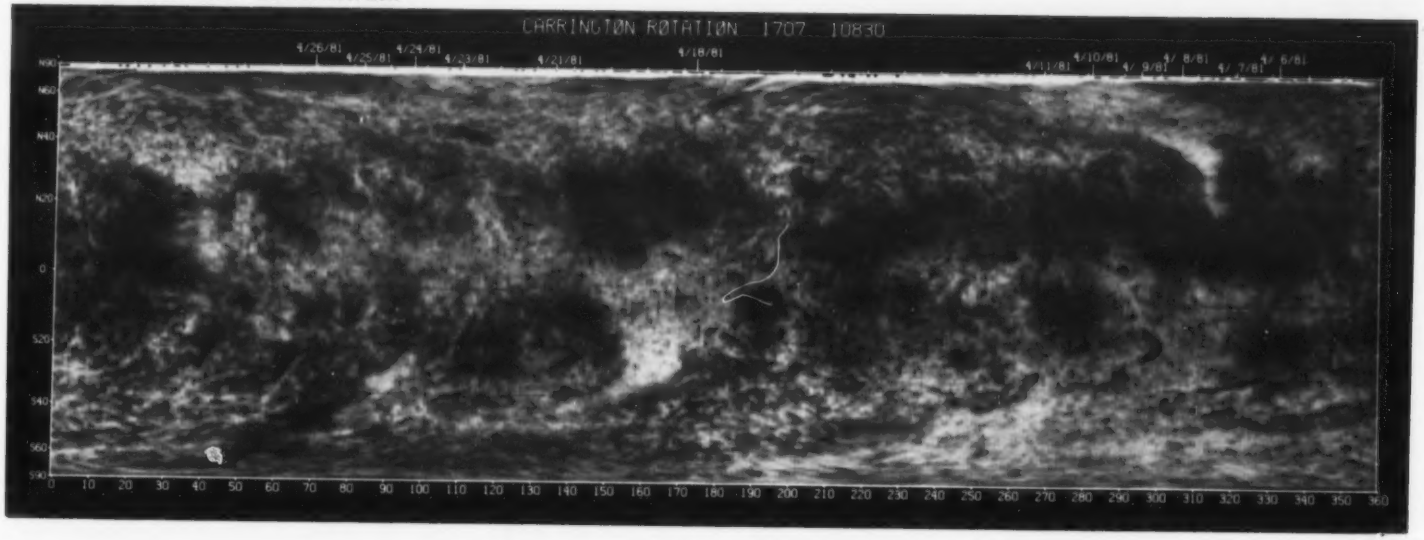
OBS. 3 letter code	GEOMAG-NETIC LATI-TUDE	COMMENCEMENT DAY	hr min (UT)	TYPE	SC - AMPLITUDES D(')	H(γ)	Z(γ)	MAXIMUM 3 HOUR - INDEX K DAY(3 HOUR PERIOD)	K	RANGES D(')	H(γ)	Z(γ)	UT END DAY	HOUR
SIT	60.0N	18	17--	..	..	..	..	20(6)	7	--	--	--	21	18
NEW	55.1N	18	17--	..	..	..	..	20(5,6,7) 21(4)	6	55	267	370	22	03
HYB	07.6N	18	1750	..	..	..	..	19(2,4,5)	4	3	102	21	19	18
HUA	00.6S	18	1752	..	..	..	..	19(5)	6	7	292	68	19	24
GNA	43.2S	18	18--	..	..	..	..	20(7)	7	30	170	190	21	17
COL	64.6N	19	04--	..	..	..	..	20(6,7)	7	425	1790	160	21	19
FRD	49.6N	19	----	..	..	..	..	20(5,6)	6	25	215	82	--	--
HYB	07.6N	19	2200	..	..	..	..	21(4)	5	4	171	22	22	02
IRK	41.0N	20	10--	..	..	..	..	20(7)	7	42	211	94	21	19
SJG	29.9N	20	1108	..	..	..	..	20(6)	6	12	190	66	23	23
HON	21.1N	20	1309	SC	--	11	5	20(7)	6	8	147	13	22	02
JAI	17.3N	20	1100	..	..	..	..			11	167	48	21	16
SHL	14.7N	20	1100	..	..	..	..			8	199	65	21	16
UJJ	13.5N	20	1100	..	..	..	..			7	185	38	21	16
ABG	09.5N	20	1100	..	..	..	..	20(5)	6	9	197	34	21	16
GUA	04.0N	20	1009	..	..	..	..	20(6)	6	10	110	30	21	16
ANN	01.5N	20	1100	..	..	..	..			6	244	67	21	16
HUA	00.6S	20	1109	SC*	1	10	--	20(6)	8	12	513	86	21	18
PMG	18.6S	20	10--	..	..	..	..	20(6)	6	12	120	70	21	18
HER	33.7S	20	08--	..	..	..	..	20(7)	6	44	206	246	21	13
TOO	46.7S	20	10--	..	..	..	..	20(6,7)	6	31	190	120	21	13
COL	64.6N	22	05--	..	..	..	..	22(6)	8	502	1630	520	23	12
SIT	60.0N	22	0527	SC*	- 3	55.*	12.*	22(6)	7	--	--	--	23	11
NEW	55.1N	22	0525	SC	4	28	6	22(5)	7	52	421	532	24	01
FRD	49.6N	22	0524	SC	- 2	23	- 3	22(4,5)	6	26	218	120	25	--
IRK	41.0N	22	0522	SC	5	32	5	22(5)	7	40	183	76	23	12
HON	21.1N	22	05	SC	--	22	8	22(5)	6	6	115	37	24	22
JAI	17.3N	22	0524	SC	- .8	31	- 6			8	261	50	23	12
SHL	14.7N	22	0524	SC	.8	32	6			--	--	--	23	12
UJJ	13.5N	22	0524	SC	- .4	39	-11			7	281	48	23	12
ABG	09.5N	22	0524	SC	- .8	35	-10	22(4)	6	7	300	48	23	12
HYB	07.6N	22	0526	SC	- .4	33	- 4	22(5,6)	7	7	339	31	23	22
GUA	04.0N	22	0526	SC*	--	36	-11	22(4)	6	--	240	50	23	12
ANN	01.5N	22	0524	SC	- 1.9	77	21			7	409	78	23	12
HUA	00.6S	22	0525	SC	1	8	6	22(5)	8	14	449	54	23	06
PMG	18.6S	22	0525	SC*	1.4*	40	38	22(5,6,7)	6	12	180	130	23	21
HER	33.7S	22	0525	SC*	- 6	19	8	22(5)	6	44	209	164	23	11
GNA	43.2S	22	05	SC*	3.2	35.*	25	22(5)	7	28	150	210	23	22
TOO	46.7S	22	0526	SC*	2	88.*	2	22(5,6)	6	35	230	120	23	11
KGL	56.5S	22	0525	SC*	- 7	-37	--	22(6)	9	--	--	--	25	21
HYB	07.6N	24	1000	..	..	..	..	24(6)	5	5	183	24	26	21
HYB	07.6N	27	1100	..	..	..	..	27(6) 28(7)	4	5	144	33	29	14
HUA	00.6S	28	1133	..	..	..	..	28(6)	6	7	287	43	28	23

REPORTS WERE RECEIVED FROM THE FOLLOWING OBSERVATORIES:

ALIBAG ANNAMALAINAGAR COLLEGE FREDERICKSBURG GNANGARA GUAM HERMANUS HONOLULU HUANCAYO
HYDERABAD IRKUTSK JAIPUR KERGUELEN NEWPORT PORT MORESBY SAN JUAN SHILLONG SITKA
TOOLANGI TRIVANDRUM UJJAIN

HELIUM 10830Å SYNOPTIC MAPS
CARRINGTON ROTATION 1707

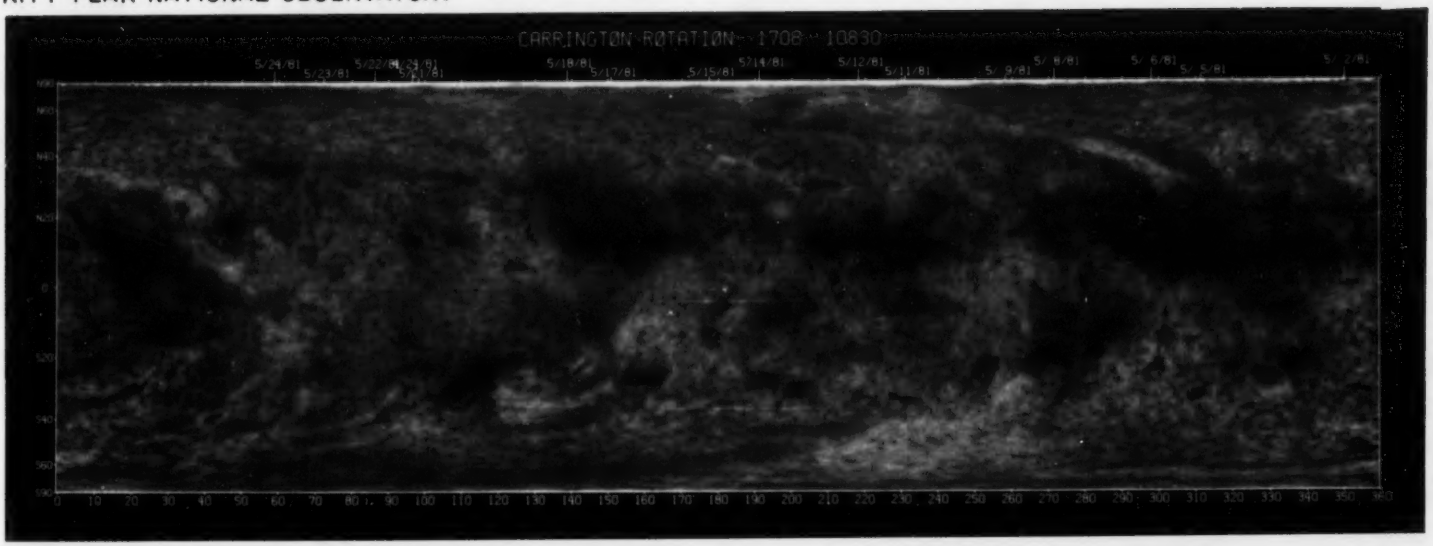
KITT PEAK NATIONAL OBSERVATORY



HELIUM 10830Å SYNOPTIC MAPS

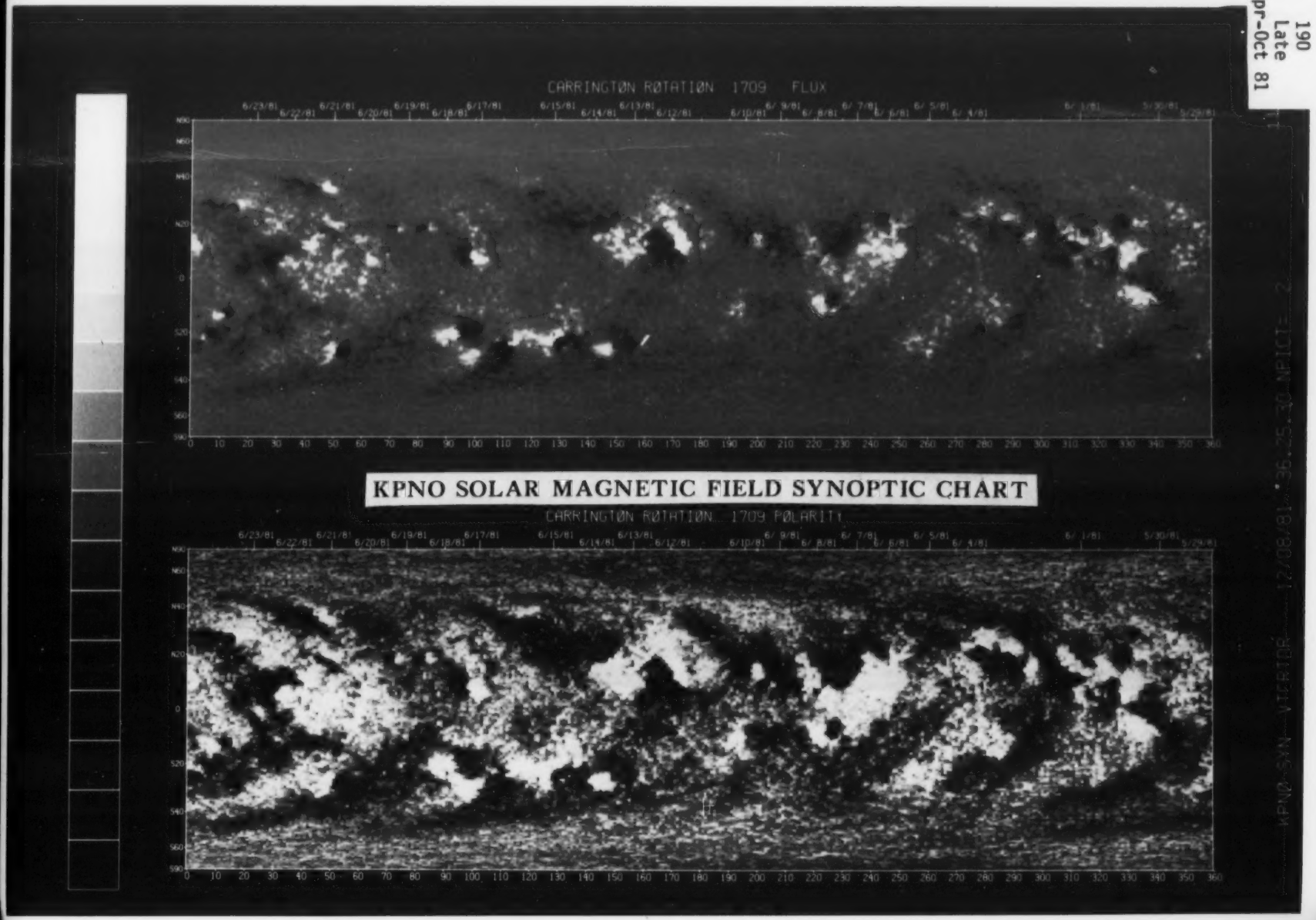
CARRINGTON ROTATION 1708

KITT PEAK NATIONAL OBSERVATORY



189
Late
Apr-Oct 81

190
Late
Apr-Oct 81



HELIUM 10830Å SYNOPTIC MAPS

CARRINGTON ROTATION 1709

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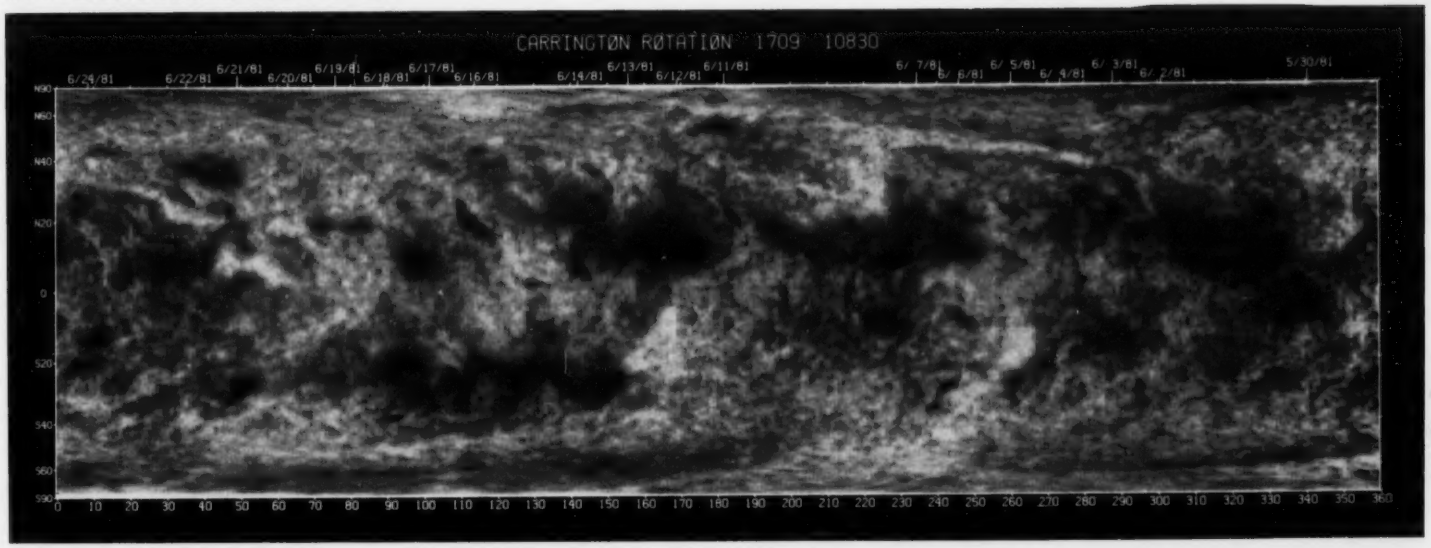

191
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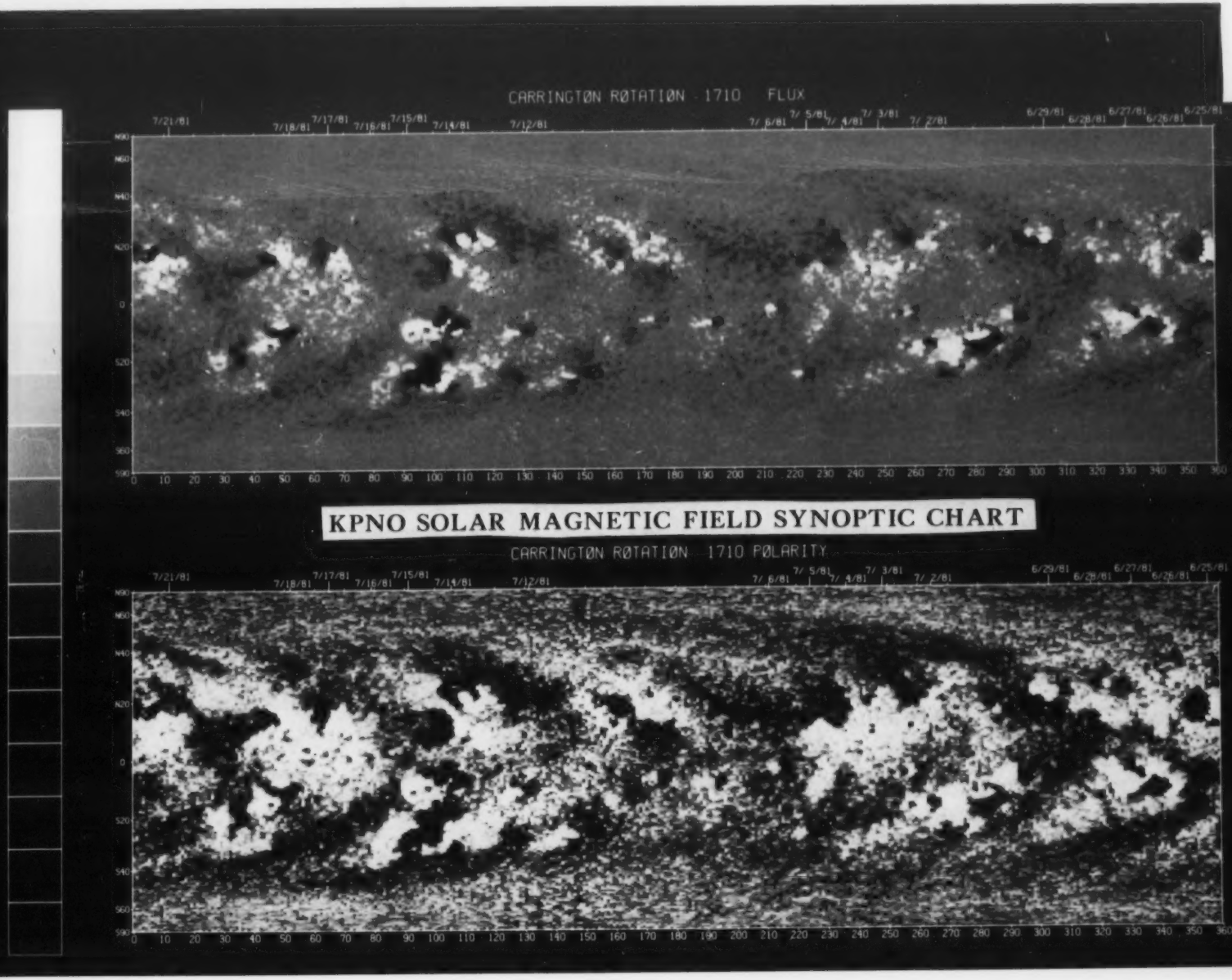
Apr-Oct 81


CARRINGTØN RØTATIØN 1710 FLUX
7/21/81
7/18/81
7/17/81
7/16/81
7/15/81
7/14/81
7/12/81
7/ 6/81
7/ 5/81
7/ 4/81
7/ 3/81
7/ 2/81
6/29/81
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6/26/81
6/25/81
N90
N60
N40
N20
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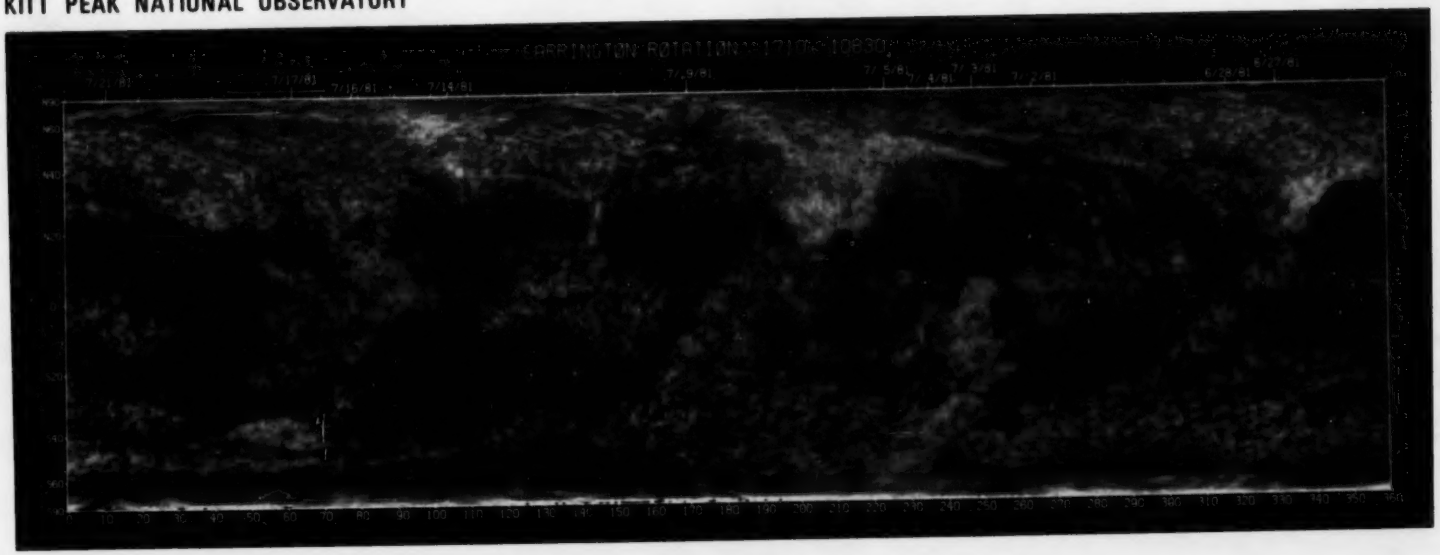
S20
S40
S60
S90
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360
KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTØN RØTATIØN 1710 PØLARITY
KPNO SYN VICR102 12/02/81 12.37.04 MDT= 2

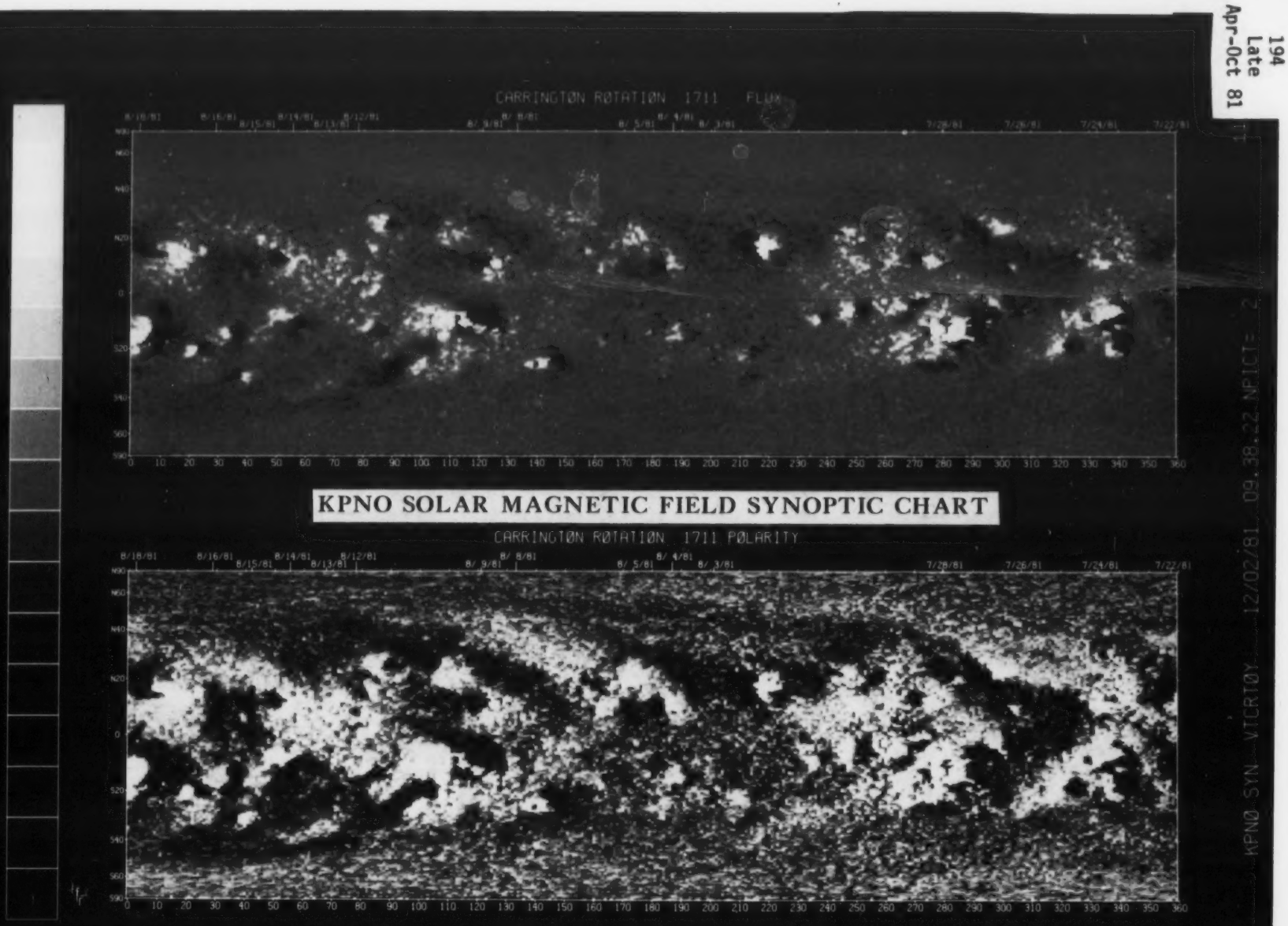
HELIUM 10830Å SYNOPTIC MAPS
CARRINGTON ROTATION 1710

KITT PEAK NATIONAL OBSERVATORY



193
Late
Apr-Oct 81

194
Late
Apr-Oct 81



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HELIUM 10830Å SYNOPTIC MAPS
CARRINGTON ROTATION 1711

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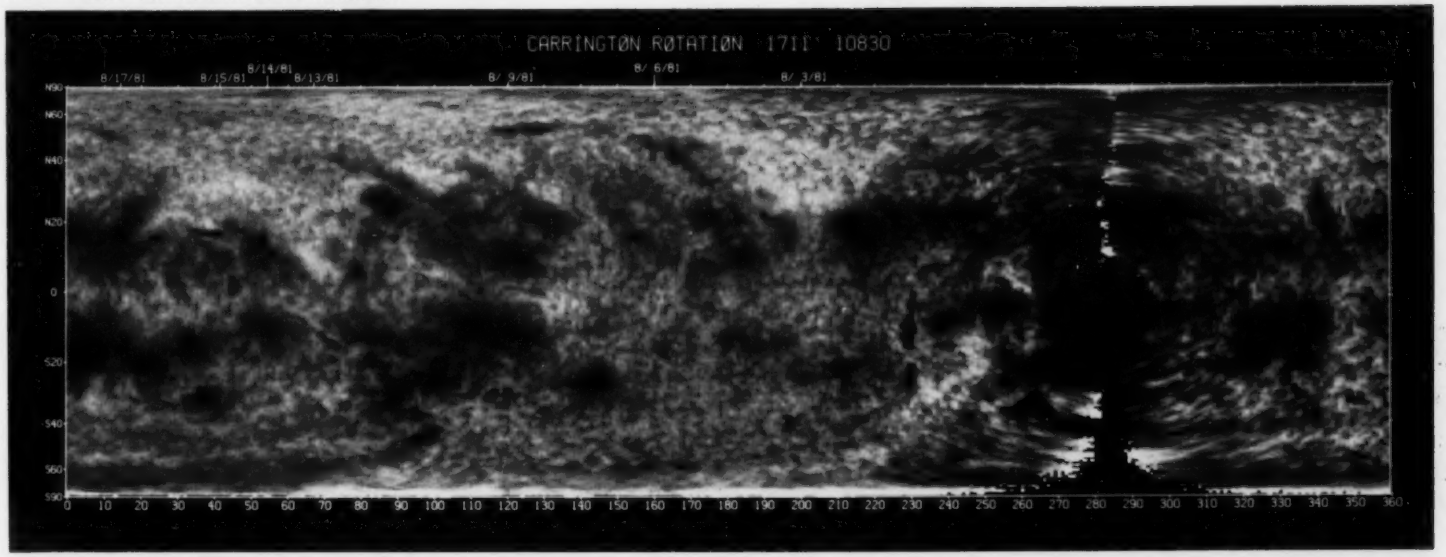
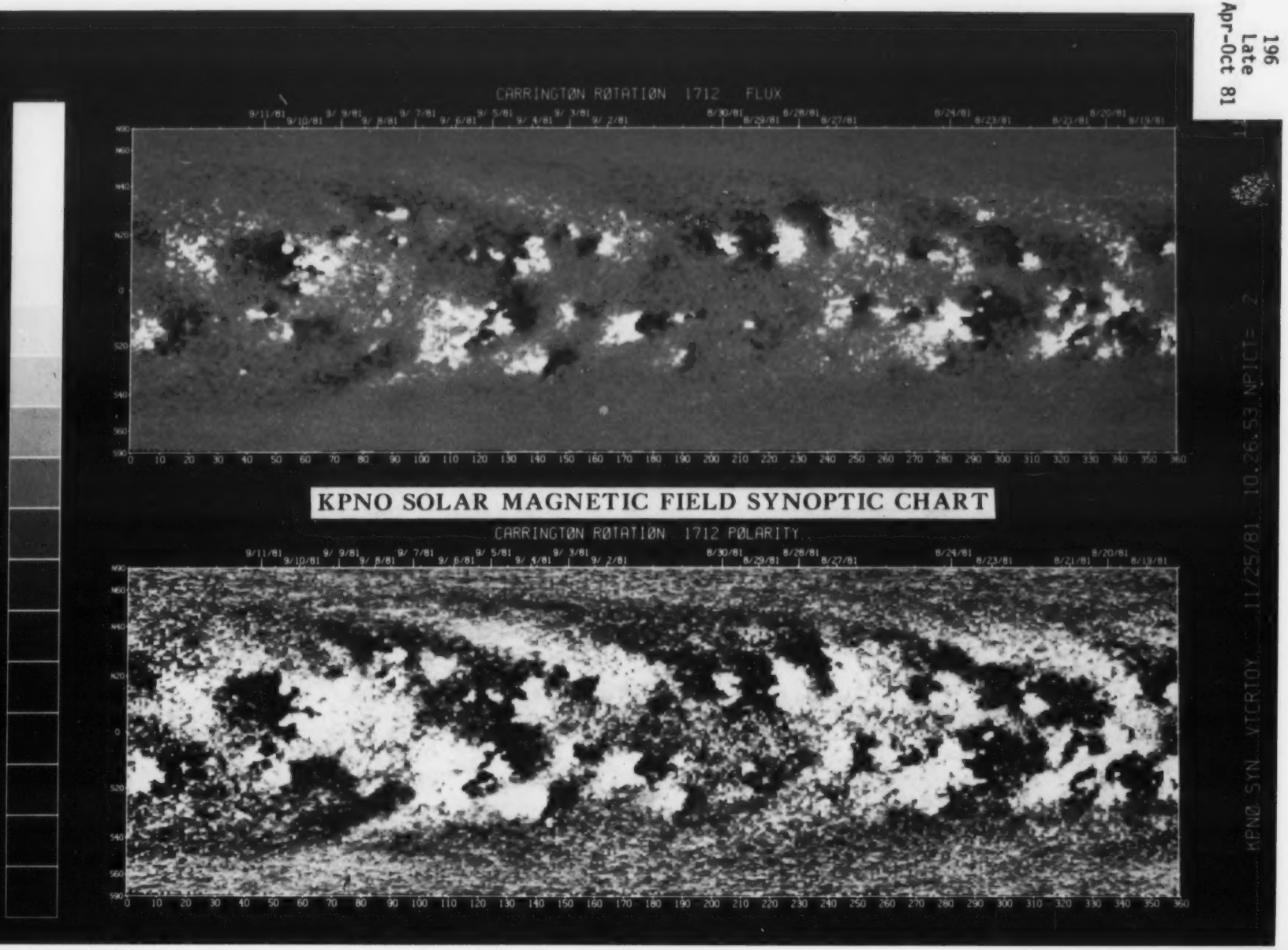


195
Late
Apr-Oct 81

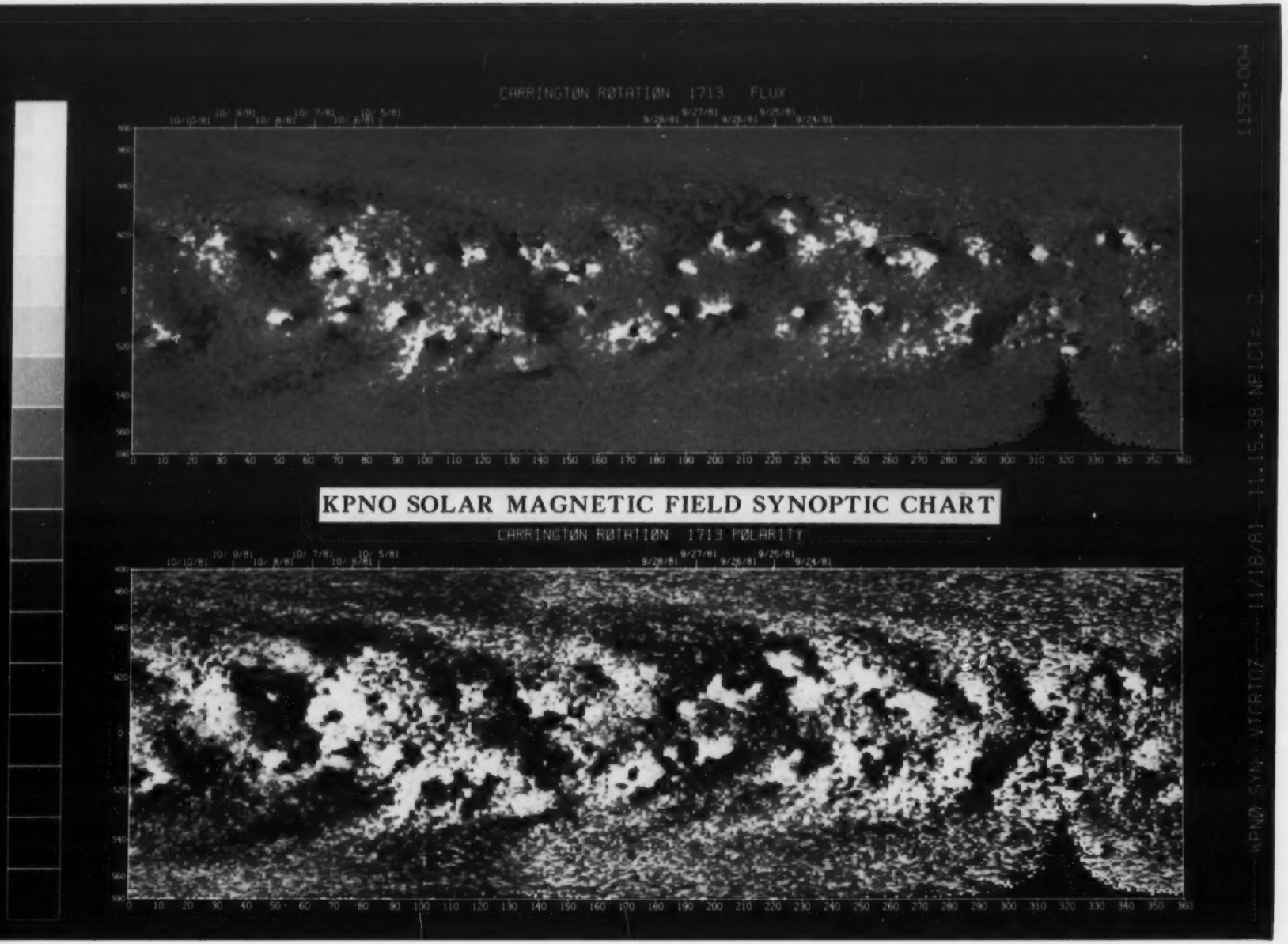


KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART

HELIUM 10830Å SYNOPTIC MAPS
CARRINGTON ROTATION 1712

KITT PEAK NATIONAL OBSERVATORY

197
Late
Apr-Oct 81


CARRINGTØN RØTATIØN 1713 FLUX
10/10/81 10/ 9/81 10/ 8/81 10/ 7/81 10/ 6/81 10/ 5/81
9/28/81 9/27/81 9/26/81 9/25/81 9/24/81
N90 N60 N40 N20 0 S20 S40 S60 S90
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360
KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTØN RØTATIØN 1713 PØLARITY
10/10/81 10/ 9/81 10/ 8/81 10/ 7/81 10/ 6/81 10/ 5/81
9/28/81 9/27/81 9/26/81 9/25/81 9/24/81
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HELIUM 10830Å SYNOPTIC MAPS
CARRINGTON ROTATION 1713

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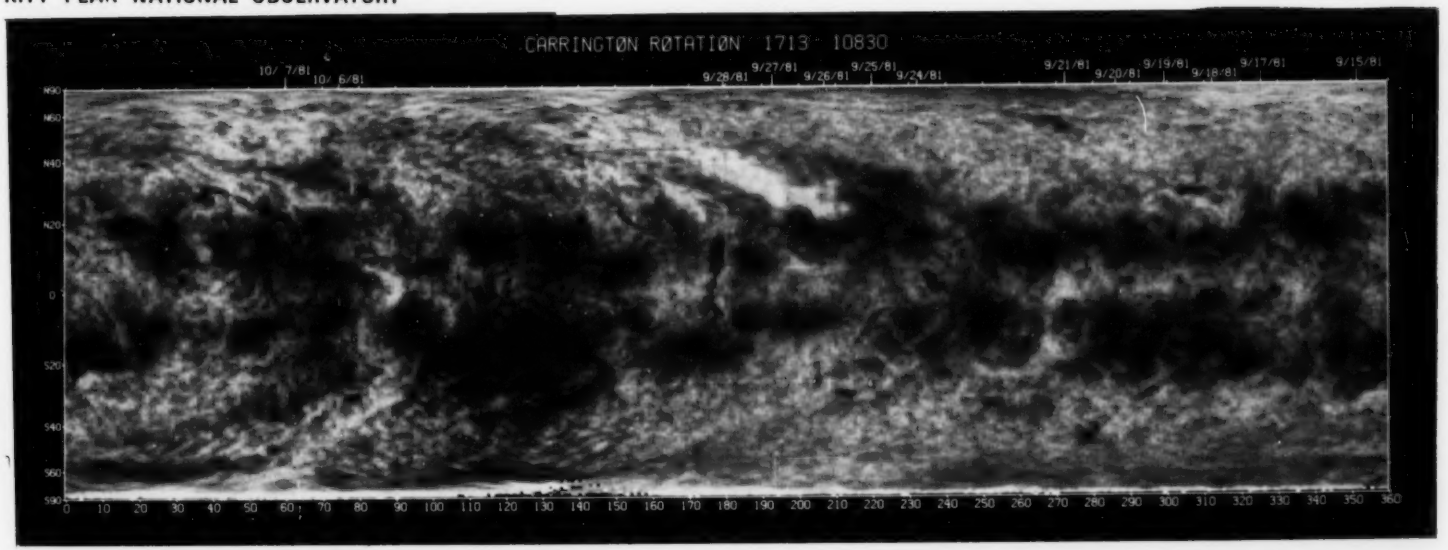

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